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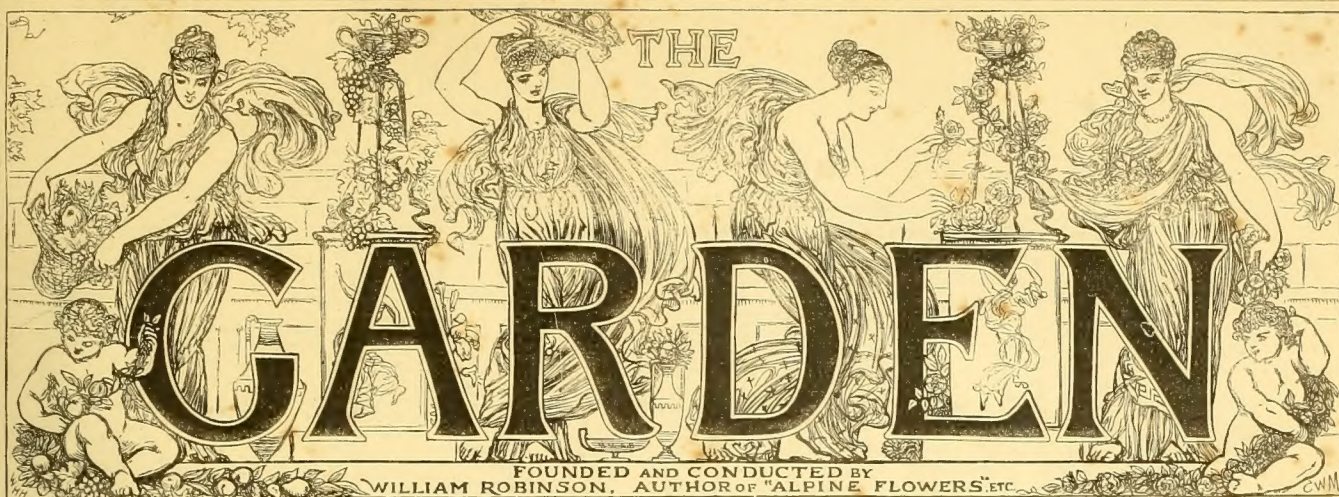
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AN

ILLUSTRATED WEEKLY JOURNAL

OF

GARDENING IN ALL ITS BRANCHES.

THIS IS AN ART
WHICH DOES MEND NATURE: CHANGE IT RATHER: BUT
THE ART ITSELF IS NATURE.—Shakespeare.

VOL. IV.

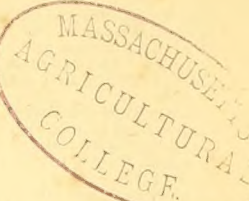
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CHRISTMAS, 1873.

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THE GARDEN.

"This is an art
Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

AMONG THE ROSES

AT THE CRYSTAL PALACE ROSE SHOW.

It is said that the Shah of Persia strongly advised the Prince of Wales, as a matter of duty, to decapitate the Duke of Sutherland, because his Grace had disgraced himself by presuming to occupy a residence of larger accommodation than that of his Royal Highness. If this be so, there can be little doubt that his Majesty would have prescribed a similar surgical operation for Mr. Thomas Hughes, the Chairman of the Crystal Palace Company, the Directors generally, Mr. Grove, the Secretary; Messrs. Wilkinson and Wilson, Managers of Departments; and for all the exhibitors on Saturday last, for presuming to display such Roses as were not to be found in his dominions, such "Maréchal Niels" as made "the Persian Yellow" desire to bury its diminished head amid its fragrant foliage, and die of aromatic pain. In the absence, however, of this sensitive potentate, no such truculent suggestions were offered; but there prevailed, on the contrary, among the many thousands present, the wish, hearty and universal, that the heads of departments, and of nursery firms, and of amateur Rosarians, might long be preserved in their integrity, to devise and develop many more such fascinating expositions of beauty, for the delight of Queen Victoria's lieges.

No prettier sight has the Shah seen than those long lines of Roses which glowed at Sydenham in their roseate, crimson, and golden glory—no sight so inspiring, so suggestive, to those poets of his land, who make a point of alluding to the Rose about every fourth line on an average, until the metaphor must almost become monotonous to those readers, who, not having pronounced views about flowers, are liable to be somewhat—

oppressed with perfume,
And wax faint o'er the gardens of Gul in her bloom.

But no one was oppressed, and no one waxed faint, at the Rose Show (except those who did not win any prizes, and those who were overcrowded on the rail), all agreeing that the Palace of Crystal was the most suitable of homes for the Queen of Flowers, and that she nowhere showed herself to such advantage, or was so loyally appreciated and admired, as here.

Not that the exhibition of Saturday last was the best that has been held at Sydenham, or is likely to prove the best of the season. There were evident traces, on the contrary, of the severe frost, which chilled the Rosarian's heart, in the fourth week of that terrible month called May; and better Roses will be shown from buds which had not appeared at the time of that visitation. The impression I would convey is this—that the best Roses which England could produce, and (because Roses grow nowhere else so perfectly) the best Roses which the world could produce, were displayed in the very best place which is available for the display; and that I very much regret, as the founder and father of Rose Shows, that our "National" exhibitions were ever transferred from the breezy heights and cloud-capp'd towers of Sydenham to that awful mausoleum of dead horticulture (R.I.P., I mean R.H.S.), that Sarcophagus, which calls itself a Garden, at South Kensington.

The principal exhibitors "in the trade" were well represented by Mr. George Paul, of the Old Nurseries, Cheshunt; Mr. Keynes, of Salisbury; Mr. Cranston, of Hereford; Mr. Turner, of Slough; and Messrs. Mitchell and Son, of Pilt-down. The absentees were Mr. Cant, of Colchester; Messrs. Veitch, of Chelsea; Messrs. Fraser, of Lea Bridge; and Mr. Francis, of Hereford; and the amateurs appeared in a powerful corps, chiefly commanded by Mr. Baker, of Heavintree; Revs. I. B. Camm, G. Arkwright, and H. Dombrain; Mr. Laxton, of Stamford; and Mr. Curtis, of Chatteris.

The best Rose in the show was the Baroness Rothschild. Perhaps having heard that her supremacy among the light-complexioned Roses was to be disputed by a stranger, Madame Lacharme, she may have taken extra pains with her *toilette*;

but, be this as it may, she eclipsed all rivals. The *débutante* referred to is a belle, nevertheless, and a great addition to our light-coloured flowers. Among other blondes, Marquise de Montmartre, Mesdames Bravy, Rivers, and Vidot, Mdles. Bonnaire and Virginale were excellent. Niphotos is sometimes pretty, but it is papery in substance, and (to quote an old Yorkshire farmer) "flothery" in form.

Of pink and blush Roses, the best were, *Souvenir d'un Ami* (shown in admirable form by Rev. G. Arkwright), *La France*, *Monsieur Noman* (as exhibited by Mr. Cranston), *Marguerite de St. Amand*, *Centifolia rosea*, Mdle. *Thérèse Levet*, *Marquise de Castellane*, and *Princess Mary of Cambridge*. Of a deeper hue, our dear old friend John Hopper, Edward Morren, Louisa Wood, Countess of Oxford, Madame Clemence Joigneaux, Dupuy Jamin, and Vicomtesse de Vesins were excellent. Of a yet darker and more crimson complexion, Dr. Andry, *Ferdinand de Lesseps*, Charles Lefebvre, Duke of Wellington, Camille Bernardin (quite perfect in Mr. Baker's boxes), and Marie Baumann principally attracted my notice.

From the darkest of all, I selected Abbé Brammerel, Alfred de Rougemont, Jean Cherpin, Louis Van Houtte, Prince Camille de Rohan, and Xavier Olibo.

Two Roses, which have been for some seasons in the catalogues, were shown in greater perfection than heretofore—*Clothilde Rolland* and *Marquise de Gibot*.

The best of last year's Roses—I mean of Roses sent out by the English nurserymen in the spring of 1872, and they are valuable additions to our gardens—were Annie Laxton (raised by Mr. Laxton, of Stamford, one of our most earnest and accomplished Rosarians), a Rose of good shape, and much improved by cultivation; Baron de Bonstetten, remarkable for its richness of colour—deep crimson; Baronne Louise Uxkull, a large, well-formed, carmine Rose; François Michelin, Le Havre, Lyonnais, Madame George Schwartz, Monsieur Etienne Levet, and President Thiers. All these must be ordered by those who are forming a collection. And I should add to them Bessie Johnson, which, though seldom large enough for exhibition, is quite one of the prettiest, freest, and most fragrant of garden Roses.

Of this year's Roses, Cheshunt Hybrid is very distinct and beautiful, both as to wood, foliage, and flowers, and will soon establish itself as a favourite in all Rosaries. My namesake, Reynolds Hole, has also showed itself to deserve the description given of it last season as "an improved Louis Van Houtte," and needs no further praise. These two Roses were raised by Mr. George Paul, of Cheshunt, who also exhibited on Saturday another seedling Rose of excellent form and colour, called "Wilson Saunders," much resembling Baron Adolphe de Rothschild and Charles Lefebvre in appearance, but reported by the raiser to be different from either in various important particulars.

The thanks of the exhibitors, judges, and others, are due to Mr. Wilson for his kindly attention. A very little more experience, added to his genial demeanour and courteous willingness to please, will soon make him as apt and as popular, as he himself would wish, in the office which he has recently accepted. S. REYNOLDS HOLE.

THE SHAH AT TRENTHAM.

THE Shah and his Persian attendants have had at Trentham a delightful glimpse of English country and of English country life. His Majesty never wearied of the gardens, the park, and the lake, and, tired as he was on the first evening of his arrival, not even the rain could drive him indoors. While at Trentham, he had the deer in the park driven towards him, and went on the lake in a boat; even as late as nine o'clock in the evening, the sails and oars of the Royal flotilla were still in the offing, and the Shah could scarcely be wiled away from the water and its bowery islands. The windows in that part of the hall set apart for his Majesty looked on to the gardens, the blinds were drawn up, and as it grew dark four thousand coloured lamps on the upper terraces were lighted, and the lines and arches of the brilliant illumination glittered like those of a fairy capital. His Majesty was altogether so pleased with Trentham that he has asked the Duke of Sutherland to give him plans of the house and grounds. Our widely-diffused wealth is still a marvel to the Shah, for he inquired whether there was in England another house and gardens such as those at Trentham. The Shah's visit to

Trentham is, we may certainly say, one of the pleasantest memories his Majesty will carry away with him from England. In connection with the entire success of all the arrangements, it would be unjust not to mention the name of Mr. Henry Wright, private secretary to the Duke of Sutherland, nor should the beauty of the gardens and their illuminations be dismissed without a tribute to Mr. Stevens, the Duke's head gardener, a man remarkable for cultural skill and artistic taste.

A VASE OF FLOWERS FOR THE SHAH.

ON the occasion of the visit of this "attractive celebrity" to the Crystal Palace on the 30th June, the private rooms appropriated to Royalty were nicely decorated with flowering plants by Mr. Laing, of the Stansted Nursery, Forest Hill, and with a number of vases, very tastefully arranged by a young lady of the neighbourhood, well known amongst amateur exhibitors at the Crystal Palace Flower Shows. Amongst them, that selected for the centre table in the Shah's private room especially merits a record. The vase chosen was composed of four tall trumpets standing in a glass dish, the centre trumpet being taller than the other three which surrounded it, and curved away from it. In the dish were four fine blooms of crimson Cactus, alternately with large flowers of white Water Lily; these were set off with a few fronds of Maiden-hair, judiciously placed. In each of the three curved trumpets was a flower of a fine white Liliun (in form and colour intermediate between *L. auratum* and *L. candidum*), in which the deep yellow of the eye of the *Nymphæa* was sparingly repeated. Around each Liliun were a few blooms of blue Cornflower, amongst which peeped out two little pieces of *Kalosanthes coccinea*, of the same colour as the Cactus below. The tallest trumpet was dressed with white *Rhodanthe*, mixed with two or three paler blue Cornflowers and a little grass, and edged with small sprays of little crimson-tubed yellow-mouthed *Echeveria*. The stems were twined with climbing Fern (*Lygodium japonicum*), and between the three curved stems stood up three well-chosen pieces of white *Rhodanthe*. The whole formed one of the best specimens of floral arrangements I have ever seen, the flowers being of the best quality and in the best condition, and the grouping being faultless. I wish that decorators could be induced generally to use fewer colours in their vases, and to repeat the colours, instead of varying them, upon each tier of their vases. The most artistic decorations that have come under my observation have been produced either with flowers of the same colours that occur in the lowest tier being replaced by smaller and smaller flowers of the same colour in the succeeding upper tiers, or (if smaller flowers are not attainable) by paler shades in the upper tiers of the colours used below. This vase for the Shah's room presented illustrations of both these principles combined.

W. T. P.

Botanical News.—Mr. George Wall, of Ceylon, who is now in England, has printed for private circulation a revised list of the Ferns of that island, adapted to the nomenclature of Hooker and Baker's Synopsis, and incorporating all the recent discoveries. Two hundred and thirty-five species are now known in the island, of which twenty-eight are confined to it. The catalogue is in folio form, and gives in parallel columns the names of the species and references to the places where they are described and figured in the "Synopsis Filicum," Hooker's "Species Filicum," the two illustrated works on Indian Ferns of Beddome, the "Enumeratio" of Thwaites, and the numbers under which they have been distributed by the latter. This is followed by an account of the local habitats and stations, and a series of remarks on critical and doubtful species.—A flora of the county of Chester, which has occupied the attention of Mr. Warren for many years past is likely soon to appear. With the object of obtaining assistance from local botanists, Mr. Warren has printed a list of desiderata and queries about the plants of Cheshire, which he will be glad to forward on application, and he will be grateful to receive any answers or additional information.—Address Hon. J. L. Warren, 67, Onslow Square, Brompton, S.W.—The Botanical Society of France will hold its annual "session extraordinaire" at Brussels this year under the auspices of the Royal Belgian Botanical Society. The first meeting will be held in the Botanical Gardens on July 9th, at 9 a.m., and the programme includes a visit to the celebrated Hans Grotto and the swamps round Hasselt (of the very rich flora of which M. Crépin has recently published an account), several scientific meetings, and visits to the botanical establishment of Ghent, Liège, Antwerp, &c. English botanists are specially invited to attend, and one can scarcely imagine a more profitable mode of spending a holiday. It is to be hoped many of our botanists will visit the hospitable Belgian capital.—*Journal of Botany.*

NOTES OF THE WEEK.

— A LARGE plant of *Aloe americana variegata* is now throwing up a strong flower-spike in the western wing of the large temperate house at Kew. The spike is 3 or 4 feet high and as thick as one's wrist.

— WE understand that a little illustrated work on "The Art of Botanic Drawing," by Mr. F. W. Burbidge, will shortly be published by Messrs. Winsor and Newton, of Rathbone Place.

— OF *Cypripedium* (Veitchii) superbiens, a very choice Lady's Slipper, a fine specimen was exhibited by Mr. B. S. Williams at South Kensington, on the 2nd inst, bearing twenty-three fine flowers. It is one of the rarest of Lady's Slippers, and was figured, it will be remembered, in our columns some little time ago.

— WE have received from Mr. Macintosh, Nurseryman, Hammersmith, specimens of a beautiful new seedling *Epiphyllum*, a cross between the creamy-white *E. crenatum* and the scarlet *E. Ackermannii*. The flowers are of good size, the inner petals peach-coloured, and the outer ones crimson-scarlet. In habit it appears to be intermediate between its parents, some of the shoots being crenated, others like those of *Ackermannii*.

— THE collection of Larkspurs in the Wellington Road Nursery is now in fine bloom, and well worth inspecting. A few of the very best are—Attraction, azure blue, close spike; Belladonna, very light sky-blue; Coronet, very fair dark ultramarine blue; Elegans, blue and lilac; La Belle Alliance, cærulean blue; Mdle. Henri Jacotot, pale porcelain blue, close spike; and Madame Geny, blue and purplish-red.

— A PROFUSELY flowered plant of *Aristolochia floribunda* was shown at the last meeting of the Royal Horticultural Society by Mr. Mellor, of Tottenham, and excited much attention, its flowers being of a bright maroon-purple, veined with pale yellow, and its throat pea-green. The foliage somewhat resembles that of *A. Siphon*, being cordate and of a fresh green colour. It is a half-hardy or greenhouse plant, and interesting to lovers of curiosities.

— OF the pretty flowering evergreen shrubs, called Escallonias, Messrs. Veitch & Sons exhibited a nice collection at the last meeting of the Royal Horticultural Society. It contained three or four unnamed kinds supposed to be new; also *E. rosea* and *E. macrantha*, which are not so often seen in gardens as they should be, and which both bear deep rosy flowers, and fine dark green glossy foliage; and *E. pterocladon*, a pure white tubular-flowered sort, well worth cultivating for the sake of contrast.

— THE Dicksonias in the large temperate house at Kew are just now in remarkably fine condition, and are throwing up from thirty to sixty new fronds each. There are many plants in the country with higher trunks than these, but nowhere, except at Kew, have we observed such grand plume-like fronds as those now to be seen there. These Dicksonias have been planted out about eight years. A fine pair of trunks, measuring 18 feet in height, has recently been added to the collection, but the finest pair in the country, which are at Gunnersbury, measure 23 feet in height.

— THE thirtieth anniversary dinner of the Gardeners' Royal Benevolent Institution took place on Wednesday evening last, at the London Tavern, under the Presidency of Lord Henry Gordon Lennox, M.P. The room was, as usual, tastefully decorated with plants and flowers, kindly supplied by Messrs. Veitch, Rollisson, Williams, Lee, Turner, and others, and there was an excellent dessert, furnished chiefly by Mr. Wilder and Baron Rothschild. The donations made on the occasion, which were of the usual liberal character, amounted to nearly 400 guineas.

— WE have received from Mr. Luscombe, of Combe Royal, Kingsbridge, South Devon, magnificent blooms of *Cantua dependens*, usually a conservatory shrub. At Combe Royal, however, the plant flowers in the open air, trained against a south-east wall, wholly unprotected. It is about 4 feet in height, and has produced many blossoms this summer. Nevertheless, it seems to require a temperature rather higher than that which even the climate of Devon affords, and in less favoured localities it will be well worth a place in a greenhouse or conservatory.

— WE understand that preparations are now being made to heat the whole of the forcing and other houses now in course of erection in the new kitchen gardens at Hatfield, the seat of the Marquis of Salisbury, on Cowan's compensatory system, which consists in the combination of a lime-kiln and hot-water apparatus. A new kind of boiler is in course of manufacture expressly for the purpose. We believe Mr. Bennett had at one time decided to use either the Gold medal or Witley Court boiler; but, wishing to give lime-kiln heating every possible chance of success, a boiler invented by Mr. Cowan will be used for the purpose. Those interested in the system will, therefore, soon have the opportunity of seeing it in full play on an extensive scale, and that in, it may be said, the neighbourhood of London.

THE FLOWER GARDEN.

GROUPING YUCCAS.

IN our endeavours to enhance the beauty of our gardens and promenades we should consider not only the plants best adapted for that purpose, but we should also select positions that will set them off to the best advantage. A group of statuary, for example, however beautiful in itself, might be comparatively ineffective without appropriate surroundings. A fountain, however artistic, would lose half its charm were it deprived of the Water Lilies that spread out their leathery leaves on the pool below it; and, in like manner, when planting groups of distinct types of vegetation, due regard should be paid to the contrast or harmony that exists between them and their associates. Among the many thousands of indigenous and exotic plants at present in cultivation we have some adapted more or less for every particular position in our gardens or conservatories, be they natural or artificial. If we require massive plants, to set off architectural features, we have the different kinds of Agaves, which, when fully developed, not only add a charm to noble masonry, but the plants themselves also derive additional beauty and force from such associations. Among hardy outdoor plants, few can compete with Yuccas for noble effect when well grown, and when set in positions in which their peculiar mode of growth and noble inflorescence can be seen to advantage. These plants are easily cultivated in most gardens, but if the soil is particularly sterile a few cartloads of fresh fibrous loam from a sheep pasture will give them a good start. Our illustration shows the effect produced by a small group—originally a single specimen—growing by the sheltered margin of a shrubbery border. Under favourable circumstances these plants soon lose the miserably stunted appearance in which we too often see them, and when in robust health, we have no other hardy plants which can be said to possess the same exotic appearance which Yuccas have. Most gardens would, therefore, be benefited by the addition of a group or two of these plants, judiciously placed for picturesque effect.



Adam's Needle (*Yucca gloriosa*).

F. W. B.

LILIES PAST AND PRESENT.

(EARLIEST AND SECOND EARLY KINDS).

THE following Lilies, with few exceptions, were evidently unknown to Parkinson. Doubtless the European forms are seedlings of a more recent date, while the Japanese varieties belong to the present century, and, we might almost say, the present date, as few of them have been known more than a few years. The more early introductions of the *Thunbergianum* race appear to have fallen out of cultivation, and some of those described thirty or forty years ago, do not appear to have been yet re-introduced.

15. *L. davuricum* var. *tenuifolium*, bright crimson, shading

down the petals to orange, and spotted with black; an elegant variety with small flowers.

16. *Davuricum* var. *erectum*, rosy scarlet, shading down the petals to bright yellow, with few spots; foliage pale green, exceedingly attractive.

17. *Davuricum* var. *nanum*, crimson, shading to orange-scarlet; prevailing hue, orange-scarlet; few spots.

18. *Davuricum* var. *grandiflorum*, scarlet, shading to orange, with few spots; sometimes sold as bicolor; very attractive.

19. *Davuricum* var. *incomparabile*, intense blood-crimson, shading to yellow towards the bottom of the petals; a very effective variety.

20. *Davuricum* var. *Sappho*, differing from No. 19 in being a little lighter in colour, and distinguishable from it by the flowers dying off brown.

21. *L. bulbiferum*, crimson, lower half of petals orange, freely spotted; bulbets freely produced in the axils of the leaves, and especially towards the top of the plant. Parkinson had a taller and a dwarfer variety of this; my plant is evidently his taller variety.

22. *Bulbiferum* var. *umbellatum*.—This Parkinson evidently cultivated, for he says, "the foliage is of a sad green;" which agrees exactly with my plant and that figured in the "Botanical Magazine." Before leaving this section I must refer back to No. 10, *Bulbiferum cruentum*. I am only acquainted with the plant through my friend Mr. Harrison Weir, who presented me with a bulb two years ago. This year I grew it in pots and I consider it to be the finest of all the Red-Lily family. It is not I think in commerce, but no doubt may be found in some old English gardens. Its colour is the intensest and deepest crimson I have yet met with in a Lily.

23. *L. croceum*.—I am surprised that this Lily is so little known in England. In Ireland it is well known, and in the West of Scotland it is to be met with commonly in cottage gardens. The only part of England where I have seen it largely grown is in the neighbourhood of Southampton, and, on expressing my surprise at seeing it so freely cultivated there, I was told that it had been brought there by some Scotch people. Its colour is bright yellow, more or less orange-shaded, with a reddish halo in the centre of the flower, the whole freely spotted; it is a charming kind, and should be more generally cultivated than it is. There are evidently several varieties of it. The one now in bloom has a blackish stem and produces a spike of flowers; while others shade off to a lighter hue, till they merge into stems entirely green, and they seem to be later in flowering than mine. The Dutch growers offer several varieties but it is only this season I have taken special note of them. The other day I had sent to me a plant of *Croceum* about 18 inches high, both flower, stem, and foliage being in miniature. I am making inquiry into the permanency of its character.

24. *L. Thunbergianum alutaceum*, glowing apricot; lower half of petals freely spotted with black; very dwarf.

25. *Thunbergianum alutaceum* var. *Prince of Orange*.—

This differs from No. 24 in being more suffused with orange, and in being a better formed flower; in no other respect does it differ from that kind.

26. *Thunbergianum sanguineum*, ground-colour tawny yellow, shaded with crimson; flowers large; plant robust.

27. *Thunbergianum bicolor*, apricot-orange, flamed with scarlet and lilac; this is a remarkably handsome variety.

28. *Thunbergianum fulvum*, soft coppery rose, a very beautiful and distinct variety, spotted with black towards the base of the petals; not in commerce; flowered with me this season for the first time.

29. *Thunbergianum marmoratum*, very rich crimson, flaked with tawny golden-yellow, and richly spotted; a very high class variety; petals beautifully recurved.

30. *L. canadense parvum*, one of the new North American Lilies, which have just flowered in this country for the first time. We have seen two forms of this, one with the flowers erect, with a long footstalk, and the other with the flowers horizontal, which is probably *Canadense parviflorum*. It is a little gem. The erect flower had the reflexed part of the petal crimson, and the cup of the flower yellow, freely spotted with brown; while the horizontal flower was lighter in the recurved part of the petals but in other respects the flowers were identical.

The whole of this group of Lilies I can recommend for pot culture, as well as for the decoration of the flower garden. They are all perfectly hardy, and of easy culture. PETER BARR.

12. King Street, Covent Garden.

CANTERBURY BELLS.

So long as the colours of these fine old border flowers were confined to blue and white, though constantly grown side by side, breaks of form and colour were unknown, but, by and bye, when we got from the continent a rose-coloured variety (double and single) after a year or two of cultivation here, crossing with the other colours ensued, and from the seed were produced new colours and finer forms, both double and single, so varied and so beautiful, that it is impossible to doubt that when generally known, these new kinds will again elevate the old Canterbury Bell into a foremost place as a border flower. The double forms consist in some cases of two cups, that is one immediately inside the other, and in other cases of a third cup, which by being somewhat cramped in the centre of the others gives to the flower a perfectly double appearance, and one also of considerable solidity. I think these double flowers are likely to prove most useful to cut from in quantity for bunching, as they are produced on the extremity of stems from 3 inches to 6 inches in length. I have a large bed of these new Canterbury Bells just now in full bloom, and very striking they are; especially the rosy-pink, mauve, and deep bluish-purple tints. In addition to these there are also pure white, blush-lilac, pure peach, and several darker shades; indeed it would be an easy matter to pick out a score of diverse hues. Bee keepers should grow Canterbury Bells largely; my flowers of them literally swarm with these industrious little insects from morn till night. Seed of the Canterbury Bell should be sown early in spring, either in a box in a cold frame or house or in the open ground. In all cases it is necessary that they should be got forward early, so that the plants may be as strong as possible for the winter, otherwise they may not bloom the succeeding summer. If the seed be sown as soon as gathered, the plants cannot be got strong enough to bloom the next year, but they will be extra fine for the succeeding summer. A. D.

WATERFALLS AND NATURAL ROCK-WORK.

As you are evidently an admirer of picturesque beauty, I beg to direct your attention to the influences at work destructive of such beauty. Some months ago I required some stones for a Fernery which I was about to build; and at a place where I thought I could get them, to my horror I found three men, employed for repairing roads, actually knocking a waterfall to pieces to get stones for that purpose. This had been going on for some time, as I could see by the remains left of interesting formations that had existed on the banks for about one hundred yards, associated with the rugged rocky bed of the river; and while I was present, they were just about to operate on the chief part of the waterfall itself. I was, however, able to save from destruction a very curious natural rock bridge, a thing now rare in this country. It is sad to see the beauty of some of our lovely dells thus impaired. There was once a very picturesque rocky bank by the side of a road near Tunbridge Wells, which was altered in forming the railway,

and now most of it is destroyed. This bank was topped with sable Yews, the roots of which grew down and grasped the rocks fantastically. At the beautiful Falls of the Conway, great injury was done some years ago by cutting away the rocky brow to make an ugly wooden salmon leap. Some of our streams and waterfalls, too, are so smothered up with trees that it is difficult to see them, and in some few places, impossible. I could name many which would be greatly improved by being judiciously relieved a little from the wood with which they are overhung. At Matlock there is a waterfall representing the segment of a circle, which visitors are invited to see. The pretty little illustrations you give from time to time cannot, I think, fail to induce people to pay more respect than they hitherto have done to such striking natural features as may exist in their particular localities, instead of being indifferent to their picturesque treasures. Bits of rock cropping up give rugged grandeur to a place, but these are often blown up and destroyed merely for the sake of the stone. What pains are frequently taken in railway cuttings to get them fair to the eye, while with less trouble and equal suitability they could be left rugged, forming numerous ledges, on which Heath, Broom, Brambles, Yews, and Golden Gorse, would grow and have a pleasing effect. J. PULHAM.

Low Retaining Walls and their Decoration.—My garden occupies a steep slope, necessitating the use of retaining walls, which are not always available for fruit. I intended to cover them with Ivy or other creepers, but the idea occurred to me of leaving at short intervals apart, little pockets, by the omission of one whole and two half bricks, and planting Ferns in them. The Ferns do only moderately well, so I let them grow where they like, and where they do not succeed, I put pots, chiefly of *Tropæolums* of various shades, with *Lobelias* and *Cerastiums*, in the pockets, and the effect against the wall of dark Luton brick (by far the best brick for harmonizing with foliage or flowers) is very bright and pleasant. As many have spoken well of the effect thus produced, the hint may be of use to some of your readers.—B. W. S.

Mildew on Roses.—What is the best remedy for white mildew on Roses? Ten days ago my Roses, with the exception of three or four, were in the most flourishing state. I left home last week, and on my return all my long-cherished hopes of a glorious show appeared at an end. The leaves were curled up, and stagnation of development of the buds had set in. In my distress I told my man to soot them, but he applied the soot too freely, and has burnt the leaves. The Roses look better this morning, after twice syringing. What ought I to do? The blight seems to victimise all without exception.—C. W. [The best cure for mildew on Roses is what is called *Sulphur vivum* (black sulphur), which can be readily applied with an ordinary flour dredger. Two or three applications are generally found to be effectual, and a good syringing afterwards soon cleanses the plants. Mildew is very troublesome generally at present.]

Variegated Abutilons.—Allow me to recommend to the notice of your readers a variegated form of the *Duc de Malakoff* Abutilon, which is in every way superior to *Thompsonii*; the former has a much larger leaf than that of the last named kind, is more beautifully marbled, a stronger grower, and the flower is much darker in colour than that of *Thompsonii*. One of the most charming Abutilons, however, and probably the most useful for bedding purposes, especially as an edging plant to be pegged into form, or to grow down and cover a sloping edge of some 9 to 12 inches deep, or as a carpet plant, or for baskets, is *Abutilon vexillarium*, a real creeping variety, having a habit of growth much like that of Ivy. It has small, pointed, and richly marbled leaves, that are most effective in colour, it is also a free-growing kind which can be readily propagated, and is moderately hardy. Those who have large quantities of plants to bed out yearly will do well to make a note of this variety, which I am certain will prove everything desired in its peculiar colour for the purposes mentioned.—A. D.

Onosma megalospermum.—I enclose you a lateral shoot of a new species of *Onosma* raised by me from seed received under the above name. It grows quite 3 feet high, with a stout erect stem furnished near the summit with several horizontally disposed branches, each of which produces from 6 to 8 or more flowers, of a form more resembling those of an *Echium* than an *Onosma*. The corolla is about 1½ inch long, inclusive of the tube, the upper portion funnel-shaped, with a spreading five-lobed margin, the lobes very obtuse. The ground colour is flesh, faintly tinged with chocolate, the two upper lobes having a deep chocolate stripe running nearly to the base of the tube, and marked with a central line of white. The foliage is lanceolate, with short petioles, the radical leaves being 12 to 18 inches in length. The whole plant is clothed with coarse but very pellucid hairs, especially in its upper half. Though not a showy species, its distinct habit

and the singular colour of its flowers impart to it considerable interest. Unfortunately the seeds, which are as large as a Marrowfat Pea, are remarkably obstinate, for even when sown as soon as gathered, they have refused to germinate, with one or two exceptions. The plant is probably a native of the region of the Caspian, but I am unable at the moment to give the authority for the specific name.—W. THOMPSON, Ipswich.

ALPINE PLANTS IN CHINKS.

MANY signally fail to grow the very plants they most admire, because they do not grant them the conditions needful. Some of the alpine plants are notable examples of this, and the little engraving below is given to illustrate a case of this sort. This drawing was taken accurately from a photograph of a natural rock, and it shows how the cleavage opens and forms chinks in which little plants root vigorously. The fissures are deep and the tiny ledges succeed each other upwards in a charmingly accidental way. The chinks allow the roots to travel to any depth, and it is a chance of which they quickly take advantage. So situated, plants have little or no soil, but they do not perish from the stagnant wet of winter as they would do if on the level ground; they never suffer under the hottest sun, and the nutriment, such as it is, never fails them. Little alpine plants



Plants in chinks of natural rock.

in positions of this kind seem to live for a long time; indeed, I have seen specimens of *Androsaces*, so grown, that were as aged looking as old trees. That alpine plants thrive so well on walls is not to be wondered at when we consider how they root into a mass of rock—a much more compact body than a wall of stone or brick. It is, of course, difficult in the artificial rock-garden to find precisely similar positions; but sometimes, where natural rock crops up, there is a chance of doing some interesting planting in this way. One advantage of such an arrangement of chinks as that shown in our illustration is the perfect exposure of the surface to rain. Such an abundant crop of life could not exist if the chinks were not so fully exposed as they are to the rainfall. W. R.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Veronica pinguifolia.—This little shrubby *Veronica* deserves to be better known. It forms firm neat bushes 6 to 10 inches high, covered with small glaucous leaves, and produces white flowers abundantly. A native of New Zealand; it is hardy, and will be found a great addition to our rock gardens.

Dictamnus tauricus.—This fine border plant is now throwing up flower-spikes 3 feet in height in the Wellington Road Nursery. Its flowers, which are white and pink streaked with crimson, show up well above the foliage, which is of a fine healthy green.—R. H. B.

Aristolochia tomentosa.—This species is grown as an isolated plant in the gardens at Bilton, and forms an interesting object on the lawn. The plant has a downy look, which, apart from the leaves, distinguishes it at once from the common *A. Siphon*. It is well worthy of more extended cultivation.

Funkia subcordata.—This plant, known also under the names of *F. grandiflora* and *F. alba*, is one of the most beautiful, and at the same time, neglected, hardy flowers we possess. The leaves are of a light yellowish green, and the flowers held well above the foliage on foot-stalks 12 to 16 inches long. They are of the purest white, nearly 4 inches long, opening wide at the mouth, but with the tube long and slender. They are produced in succession, spring from the axil of a little stem-leaf, and are as sweet as Orange blossoms. The plant likes light and warm soil and sunny positions, and should be in every collection of hardy flowers.

THE SILPHIUM OF THE ANCIENTS.

THE following interesting account (translated from the German of A. S. Oersted) of the celebrated plant which has so long puzzled numismatist antiquarians, appears in the last number of the *Journal of Botany*.

In the middle of the seventh century B.C., some Greeks from the island of Thera settled on the north coast of Africa, in the district then called Cyrenaica, and now known as Barka. The state which was subsequently developed owed its great commercial prosperity very largely to its trade in Silphium, and the numerous coins found in the district bear on one side the head of Jupiter Ammon, and the Silphium on the reverse. This plant grew wild in the uncultivated southern part of the country, and did not succeed under cultivation. From its root when sliced a milky juice exuded, which, when dried or mixed with meal, formed that costly spice which was so highly valued by the Greek and Roman *gourmets*, and was also in high repute as a medicine. Silphium fetched its weight in silver, and was reckoned with other precious things in the Roman state treasures. During the decline of Cyrenaica the production of Silphium gradually decreased; the country first fell into the hands of the Ptolemies (322 B.C.), and afterwards became a Roman province. In 61 B.C., 30 lbs. of Silphium were brought to Rome, and the Emperor Nero had a specimen of the plant sent to him as a curiosity. It was still known in the fifth century A.D.; Synesius, who, when he died in 431 was Bishop of Barka, mentions that he supplied a friend with a specimen of the rarity. The reason of its decrease is said by Strabo to have been an incursion of nomadic barbarians who laid the country waste. The farmers also let their cattle feed upon it. Much has been written as to the nature of this remarkable plant, which, from the description and the figures on the coins, has always been known to be an Umbellifer. Modern travellers who have visited Barka (now an altogether desolate land, with numerous ruins of towns and temples), such as Della Cella, Pacho, Barth, the brothers Beechey, and more lately Rohlf, have considered a common Umbellifer which the natives call *Drias* (*Thapsia Silphium*, Viv., *Laserpitium Derias*, Pacho; according to Cosson (*Bull. Soc. Bot. Fr.* 1865, p. 277) merely a form of the South European *T. garganica*, L.), to be the Silphium plant; but neither its appearance nor its properties bear any resemblance to those of that plant. The celebrated plant of antiquity was wholesome to cattle; the *Drias* is poisonous, and has frequently proved fatal to camels. Various other species have been suggested by authors:—*Ferula tingitana*, L., by Sprengel; *Laserpitium gummiferum*, Desf., by Link; *Ferula Assafetida* by the Dict. d'Hist. Nat., and *Laserpitium Siler*, L.

Prof. L. Müller, when engaged in his work on the coins of Cyrenaica (*Numismat. de l'ancienne Afrique*, vol. i. "Les monnaies de la Cyrénaïque," 1860), asked the aid of the author on the question of the Silphium; and it was then discovered that a figure on the coins which had been supposed to represent a heart (Dujalais in 1850 (*Rev. Numism.*, p. 256—264) had correctly explained its nature) was the fruit of the Silphium. A close examination showed that this figure presented with considerable clearness the characters of the genus *Ferula*, or a closely-allied genus. The foetid gum-resin called *Assafetida* was also known to the ancients, and considered by them as closely allied to the Silphium, being called medicinal Silphium. The plant yielding this drug was first ascertained by Kämpfer, who in his "*Amonitates exotice*" (1712), which contained the results of his travels in Asia from 1683—1693, gives (p. 536) an account of it, which, through remarkable for its precision and accuracy, has no exact description of the fruit. This was only supplied a few years ago when Lehmann, Bunge, and Borszczow again discovered the plant, which was described by Bunge as the type of a new genus, under the name of *Scorodosma foetidum*. Besides Kämpfer's plant, we know now, however, a second plant yielding *Assafetida*, discovered in 1838 by Falconer in North Cashmere, and described by him in 1846 as a new genus, *Narthex*. This flowered in the Botanic Garden at Edinburgh, and Sir W. Hooker published an excellent figure of it in the *Botanical Magazine*, t. 5168. The plant is 7 feet high, the leaves grow in pairs close together, and the sheaths closely cover the thick upright stem in a way very unusual in Umbelliferae. The first glance at Hooker's figure recalled to the mind of the author the Silphium plant on the coins, and a closer examination confirmed him in considering *Narthex Assafetida*, Falconer, to be nearly allied to it. In the determination of their affinity it is important to insist upon the accuracy with which other plants and animals (e.g., the Date-Palm, the horse, sheep, gazelle, and jerboa) are represented on these coins; we cannot doubt that in the case of so valuable a plant equal accuracy would be employed. A minute comparison of the figures of the two plants will strengthen our belief in this.

If we reduce the picture of *Narthex* to the size of the representation of the Silphium on the coins, and place the one by the other, we shall remark a surprising likeness in the appearance of the two plants

The stem, and form and arrangement of the leaves and flower-stalks, are quite the same, and a comparison of each distinct organ brings out still more clearly this resemblance. The root, or rather the root-stock, of both plants is of the same form and ramifications. The erect, thick stem, longitudinally furrowed, which characterises *Narthex*, is also found in the *Silphium*; these furrows are very clearly depicted on the coins. There is also, particularly if one examines the best representations on the coins, a remarkable resemblance in the arrangement of the leaves; we can see that these are not truly opposite, but only approximate in pairs; the sheaths are very large, with conspicuous longitudinal nerves; the blade is divided into three to five segments, on which again subdivisions are indicated. That these notches should not be represented on the common coins in so small a space is quite natural: if, however, we compare the outline of the *Narthex* leaves with the representation of the leaf surface of the *Silphium*, there is a great resemblance. The form and size of the flower-stalks agree entirely in both plants. As to the fruit, we see from the coins that the *Silphium* quite agrees with *Narthex* and *Ferula*. In these *Umbelliferae* the fruit is very closely compressed, and furnished with a thin membranous border, for which reason *Theophraste* characterises it as foliaceous. The small difference in the structure of the vittæ, by which these genera have been separated, we need not of course expect to find drawn on the coins. On the other hand, there may be usually observed at the bottom and top of the fruit of *Silphium* small globular bodies, of which the first represents the base of the fruit-stalk, and the second the stylode. On one coin the carpophore is represented between two mericarps, with their apices turned towards each other. So far as the coins go the *Silphium* plant might be referred equally well to *Ferula* or to *Narthex*. As, however, it so entirely agrees with the only known species of *Narthex* in habit, it is in every way more probable that it should belong to that genus. As a species it is not of course to be identified specifically with *Narthex Assafoetida*; not only does the obcordate form of the fruit forbid this, but the properties of the gum-resin. That obtained from the Indian plant entirely agrees with the Persian *Assafoetida*. The author proposes to call it *Narthex Silphium*.

According to Pliny (Nat. Hist. xvii., 2) there were three distinct zones of vegetation to be distinguished in Cyrenaica—the wooded coast zone, an intermediate zone in which agriculture was carried on, and a hilly and desert zone where the *Silphium* grew. This description is equally applicable at the present day. The slope of the plateaux from Barka towards the coast is still covered with a luxuriant growth of wood, amongst which is especially noteworthy the occurrence of the Cypress, of which Rohlfs brought with him fruiting specimens. As soon, however, as the heights are attained, the appearance of the landscape changes; only low stunted bushes, *Artemisia*s, and Thistles clothe the ground, whilst splendid ruined towns attest the density of the earlier population. Farther on towards the south the land takes a wilder character, and it was here that the *Silphium* grew in the past. As Barka has not yet been thoroughly explored (since the collection of Della Cella, which laid the foundation for Viviani's "*Floræ Libyæ Specimen*," and Pacho's small collection, we have only the very considerable collection of Gerhard Rohlfs), the hope need not be given up that the *Silphium* plants may still be found either there or farther into Africa. Other plants which have disappeared from the places in which they were known to the ancients are often refound in distant regions; for instance, the African Papyrus, which was formerly very common in Egypt, is now no longer to be found there, but occurs again in the distant swampy regions of the White Nile.

Roses and Ladies.—A well-known German florist related, in a high state of irritation, his troubles in this way. He said—"I have so much drouble mit de ladies ven dey come to buy mine Rose; dey vants him hardy, dey vants him doubles, dey vants him moonly, dey vants him fragrand, dey vants him nice gooler, dey vants him ebry dings in one Rose. I hopes I am not vat you calls von uncalled man, but I have somedimes to say to dat ladies, 'Madame, I never often sees dat ladies dat vas rich, dat vas good temper, dat vas youngs, dat vas clever, dat vas perfection in one ladies. I see her much not!'"

Homeless Herbs.—For me, there is manie a plant I entertayn in my garden and paddock wiche the fastidious would cast forthe. I like to teache my children the uses of common things—to know, for instance, the uses of the flowers and weeds that grow in our fields and hedges. Manie a poor knave's pottage would be improved, if he were skilled in the properties of the burdock and purple Orchis. The roots of the wild Succory and water Arrow-head might agreeable change his Lenten diet, and Glass-wort afford him a pickle for his mouthful of salt meat. Then, there are Cresses and Wood-Sorrel to his breakfast, and Salep for his hot evening mess.—*Sir Thomas More.*

THE INDOOR GARDEN.

DIPLADENIAS.

SEVERAL of the members of this genus may be classed among the best of the climbing plants suitable for stove treatment, and recommend themselves to the notice of the plant grower as being of comparatively easy culture, and at the same time bearing a profusion of gracefully-formed richly-coloured blossoms of good substance. Two or three varieties make very effective exhibition plants when well grown and neatly trained on a balloon-shaped trellis. *Dipladenias* are very easily propagated from cuttings, plunging the cutting pots in a mild bottom heat, and keeping them moderately moist until rooted; after which they should be potted off into small pots, using a fresh compost of fibrous loam, leaf-mould, and sand. To this, some noted growers add one-fourth or more of fibrous peat; but the former ingredients are sufficient, if the pots are thoroughly well drained. In order to bloom these plants to perfection, they must be grown on vigorously, without a check, until the pots, into which they are shifted to flower, become filled with roots, and kept free from insect pests, to which they are especially liable if subjected to irregular treatment. As the plants make their growth, thin out the weakest shoots, and re-pot them as required. When the pots become filled with roots, a little clear manure-water will be found beneficial in strengthening the remaining shoots and in improving the colour of the foliage. The finest specimens I ever saw were grown in a moderate bottom heat, the shoots being trained separately up lengths of thick twine, and close to the glass. When the flower-buds made their appearance, the strings were cut, and the shoots trained on a globe trellis. The foliage is of a fresh deep green colour when well grown, and forms an appropriate background for the clusters of wax-like, rosy-crimson, pink, yellow, or white flowers. During the growing season they must be syringed two or three times daily, not only as a means of promoting vigour, but as a preventive of the ravages of red spider. Thrips may be treated to a dose or two of Fowler's Insecticide should they put in an appearance. A short descriptive account of some of the best species may be interesting to cultivators who have not yet added these plants to their collections.

D. ACUMINATA.—This species, at first sight, might easily be mistaken for *D. crassinoda*, which it somewhat resembles in habit, and is also furnished with a similar ring of fleshy teeth at the thickened nodes. The flowers are of a similar deep rose colour, but each segment is remarkably acuminate. The individual flowers are also much larger, being from 4 to 4½ inches in diameter. The calyx lobes are linear, and longer than those of *D. crassinoda*. It is a native of Brazil, and first flowered about 1854.

D. AMABILIS.—This noble variety is the result of a cross between *D. splendens* and *D. crassinoda*, the latter being the female parent. It owes its origin to Mr. H. Tukey, of Bramley, near Leeds, and was first sent out by Messrs. Jas. Backhouse and Son, of York, in 1865. It most nearly resembles its female parent, but is far superior to that variety. In habit it is far superior to its parents, being more robust, and bearing flowers of richer colouring, the prevailing tint being deep bright rose, almost verging on crimson in the darker tints. Its foliage preserves its deep glossy green colour until late in the season, and the plant is a noble subject for autumn exhibitions, at which it is not unfrequently seen.

D. AMENA.—Another of Mr. Tukey's hybrids, obtained by crossing *D. splendens* with the last-named species, the result being the production of a variety of good habit, bearing flowers nearly perfect in form. The blooms are about 4½ inches across, and of a delicate rosy tint, streaked and tinted with darker shades of the same colour. The individual lobes of the flower are rounder and of greater substance than those of its parents. Like the last, it has a good constitution and foliage of a deep fresh green colour. The plant was, I believe, sent out in 1869 by Mr. W. Dean when at Shipley Nurseries, near Bradford, and is now occasionally met with at exhibitions.

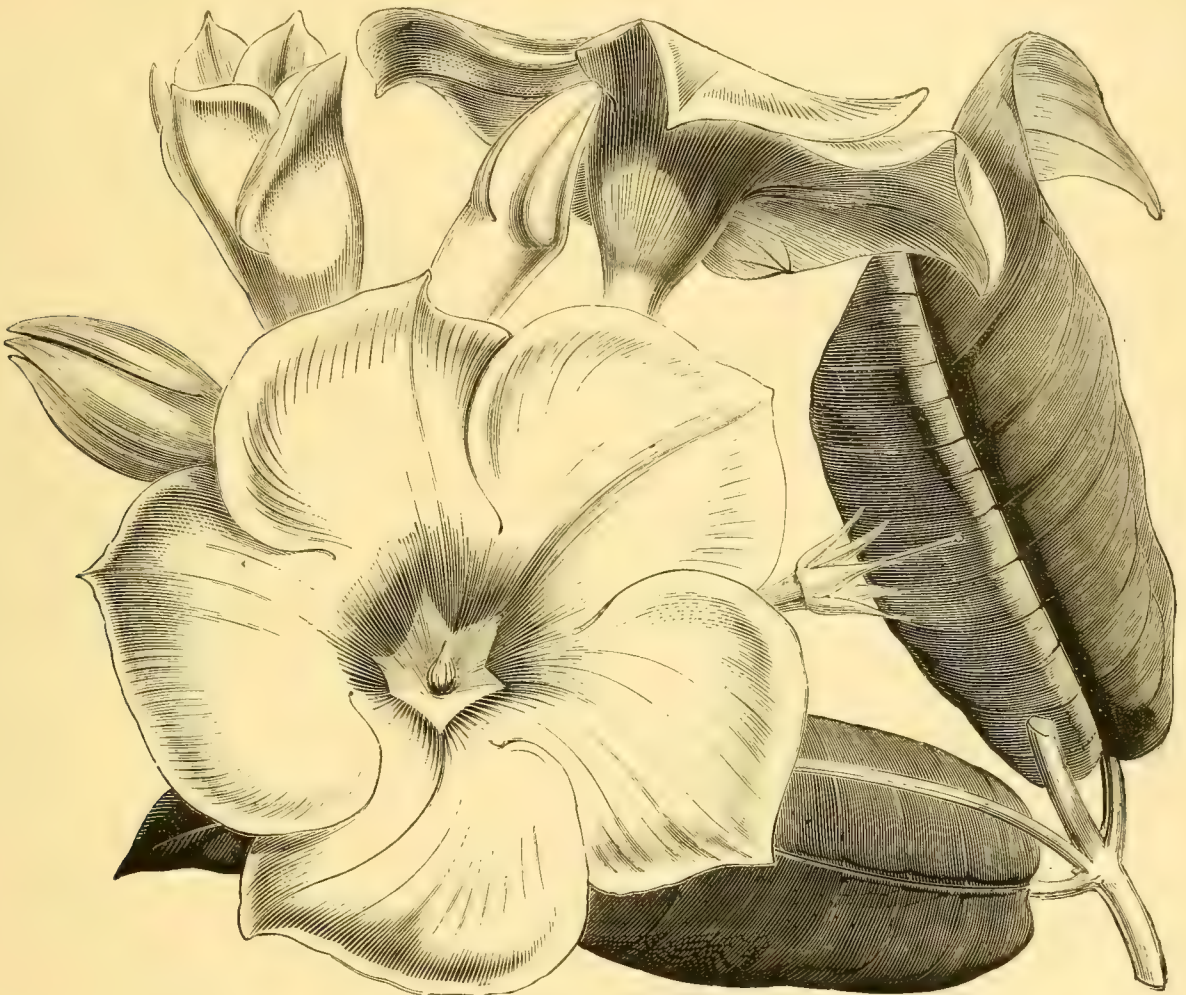
D. BOLIVIENSIS.—We have here a species sent by Mr. Pearce to Messrs. Veitch and Sons, from Bolivia, and very closely allied to the old and almost-forgotten *D. urophylla* (a species

bearing clusters of small yellow flowers, the lobes tipped with bright red, and having oblong leaves, very much acuminate at their apices). The present species differs in having leaves much less acuminate, and in the flowers being pure white, with a lemon-yellow throat. The flower tube is very slender, much more so than in its last-named congener, *D. urophylla*. The plant has a good constitution, though of slender habit, and flowers profusely when liberally treated. It was first flowered and exhibited in 1868, gaining the Royal Horticultural Society's medal as the finest new flowering plant then exhibited. It is scarcely showy enough for exhibition purposes, though useful and distinct as a decorative plant.

D. CRASSINODA.—An old and effective species when well

nearly half that width, oblong, acuminate, and glabrous. It bears great clusters of golden-yellow flowers, nearly three inches in diameter, each lobe having a broad blotch of vermillion near the mouth of the tube, while the tube itself is streaked with the same colour. It is an effective plant, but seldom met with in collections.

D. INSIGNIS.—A charming variety, bearing large crimson or rosy-carmine flowers about 4 inches in diameter, and of good substance. It is a free grower and a most profuse bloomer—qualities inherited from its parent, *D. amabilis*. Our illustration gives an excellent idea of this grand acquisition, which was raised by Mr. S. Fenwick, gardener to John Waterhouse, Esq., Well Head, near Halifax. It is undoubtedly the finest



Dipladenia insignis.

grown. Stems having a whorl of fleshy lobes at the nodes, and bearing axillary clusters of deep rose-coloured flowers. The individual flowers are about 2 to 2½ inches across, and are produced in tolerable abundance. Introduced from Corcovado mountain, near Rio Janeiro, where it forms a scandent, twining shrub, at a considerable elevation.

D. FLAVA.—This is another old species, introduced from Santa Martha (New Granada) in 1845, and bearing golden yellow flowers, about two inches in diameter. The leaves are oblong, and together with the young growths, are covered with sparse silky hairs.

D. HARRISII.—A robust-growing species, introduced from Trinidad about 1854. Its leaves are about a foot long, and

variety in this beautiful genus, and is now being distributed by Messrs. Veitch & Sons, Chelsea.

D. NOBILIS.—Introduced from Brazil about 1847. The shoots rise from a rounded crown, and, together with the foliage, are quite smooth. Leaves deep green, oblong; apices retuse, the mid-rib slightly prolonged; flowers about 2 inches in diameter, varying in colour from white suffused with flesh-colour to deep rose. It is a very graceful and effective plant, though not often seen in cultivation.

D. SPLENDENS.—A fine species, a native of Brazil, introduced to our collections in 1842. Its leaves are deep green, oblong, cordate at the base. Flowers of a deep rosy colour, each bloom being nearly 3 inches across. It is a profuse-flowering

effective species, but, like all its congeners, flowers best when grown on in a mild bottom heat, and not overpotted.

In selecting from the enumeration given above, *D. insignis*, *D. amabilis*, and *D. amœna* will be found the most effective varieties, either for exhibition purposes or for stove decoration, although the others are very beautiful when well grown, more especially *D. crassinoda*, *D. splendens*, *D. nobilis*, and the unique *D. Boliviensis*, with its delicate white salver-shaped flowers.

F. W.

PREPARING FOR WINTER FLOWERS.

Just at the present time forethought is necessary to know what plants we shall have in bloom during the winter months, and therefore a few remarks upon some of the most suitable for that purpose may not be out of place. Let us repeat the fact that the flowering of all forced shrubs in the winter depends upon the thorough maturation of the summer growth; therefore, let your object be to grow your plants as robustly as possible, but at the same time spare no pains to get the growth well ripened as it proceeds. If vigorous winter-flowering plants are desired, we must grow them on freely during the summer, and not set them carelessly under the nearest fence that comes to hand, as is too often the case. Irrespective of shrubs and forced flowers, we have abundance of plants that naturally flower during the winter, and of these we need scarcely mention the many fine varieties of the *Chrysanthemum*, all of which are easily grown.

CHRYSANTHEMUMS.

To have fine specimens of these for conservatory decoration, take nicely rooted cuttings in February, pot them on, and grow them in the most vigorous manner, in a cool pit or house, until the middle or end of May, observing that the plants receive no check, but, on the contrary, get plenty of liquid manure. By that time the plants will be in 4 or 6-inch pots, possibly a foot to 18 inches high, with a stem as thick as your little finger. Then they are removed into 8-inch pots, using a rich compost of turfy loam, rotten dung, and bone-dust, and taking care to drain the pots thoroughly. At this time the plants are properly staked; that is, a stake, four to five feet high, is placed in each pot, and the plant is trained as a single stem until it is nearly 3 feet high. In doing this, the side branches may be stopped back to two leaves, and should they break again, the shoots must be pulled out, the object being to clothe the stem with foliage down to the pot, but not to encourage the lower shoots to produce flowers. Thus treated, the plants become uncommonly robust, and the branches which they throw from the top produce very splendid flowers. Of flowers, let us note one fact, and that is, as soon as formed, take out the centre bud of each truss; that but too frequently comes hard-eyed, and therefore it is better to remove it at once. The pots must be placed upon ashes, in a situation fully exposed to the sun. The plants must never, under any circumstances, know the want of water, which in dry weather will frequently require to be used twice, and sometimes three times, a day. If the plants make good progress, the strongest of them about the middle of August may be removed into 11-inch or 15-inch pots, still using rich compost and keeping them fully exposed. In shifting the plants, never remove the drainage at the bottom unless it is quite clear of the roots. You cannot do so without injuring the roots, and therefore it is better not to disturb it. It will be noted that the plants under this system of management receive no check at all, but grow to their utmost limit, accumulating strength all the time, and it is astonishing what splendid blooms they produce. To see a plant, say of *Queen of England*, producing from thirty to sixty flowers, all fine, but many of them 4 to 6 inches in diameter, is not an unusual thing; indeed, where fine flowers are wanted, this is certainly the best way of producing them. The quantity of rich liquid manure the *Chrysanthemum* will take is quite astonishing. If intended for large-sized cut blooms for indoor decoration, the plants must be divested of most of their side-shoots in their early stages, and trained up with single stems, which should be allowed to bear only one or two flowers on each. All superfluous buds should also be removed in like manner, as they make their appearance.

SALVIA SPLENDENS.

As a companion plant for the *Chrysanthemum*, the old *Salvia splendens* deserves every encouragement, its brilliant scarlet flower-spikes contrasting and lighting up admirably the cooler colours of the *Chrysanthemums*. This plant may be grown much in the same manner as the *Chrysanthemum*, but it will not take quite so much liquid manure. It is readily propagated by cuttings, grows rapidly under proper encouragement, and between spring and autumn forms a fine handsome bush. One fact must be borne in mind: it is impatient of cold, and, therefore, must be taken under cover before a frost touches it. The *Salvia* is liable to be attacked by red spider, which must be checked by frequent syringing with clean water, and an occasional dressing of sulphur.

POINSETTIAS.

These are invaluable for winter work when well grown and kept at a moderate height. To have them dwarf, strike the eyes early in April, and be careful to select them from well-ripened wood. Placed in a moist bottom heat, they soon root and throw up shoots, after which pot them in fibrous loam and thoroughly rotten dung from the frame ground. As soon as they get well established in the new soil, and all danger of spring frosts is over, place them out in pits where bedding plants have been wintered, and here grow them on during the summer months quite in the open air, and fully exposed to the sun. This is one of the simplest plans by which this showy plant may be had in perfection; yet even under this *régime* some will persist in running up too high, but our treatment of such offenders is as effective as it is simple: we merely take off the tops and strike them in bottom-heat just before the plants are ready to flower. If particularly large heads of bracts are required for cutting, a plant or two may be planted out at the back of either a plant-stove or warm conservatory, and allowed to grow on, which they will do vigorously if liberally treated, and all the attention requisite is to cut them back to two or three good eyes every spring. In this manner we have had splendid heads that measured 20 inches across. These are very effective for large vases wherever a blaze of decided colour is wanted.

ZONAL AND VARIEGATED PELARGONIUMS.

These are not nearly so much used for winter decoration as they ought to be. Plants potted now, and grown on in a cold house or pit, with a free circulation of air at all times, and full exposure on mild nights, make very useful plants to mix with the *Chrysanthemums*. Each plant must stand quite free of its neighbour, must be freely grown, and have every flower-bud removed until the middle of September, then allow them to grow on, and you will have a capital bloom through the winter. The secret of this kind of success is the thorough ripening of the growth up to the end of August, and to that end the plants cannot be too much exposed to atmospheric influences. Without maturation you cannot in the waning season have flowers. As an accompanying plant to those referred to above, an old Oak-leaved variety, called *Rollisson's Unique*, is well worthy of extensive cultivation. The flowers are bright crimson, and are produced in large trusses. We have several dozens of large plants of this variety, handsome bushes four feet high, and two to three feet in diameter. They are cut in at this season, potted as soon as they have made shoots half an inch long, using a rich compost, grown in the shade for a fortnight until they have good fresh roothold, and are then placed in the full sun until they are removed into the greenhouse in September. Thus managed they rarely fail to produce blooms every day throughout the year. There is a lilac variety of the *Unique*, which it is very well to have for contrast, but by itself it is not so effective as *Rollisson's* variety.

LUCULIA GRATISSIMA.

This is a grand winter-flowering plant. With large simple leaves somewhat like those of a *Hydrangea*, and bunches of rosy flowers, 6 or 7 inches across when well grown, and deliciously fragrant, it requires no deep perception to recognise its claims when once seen; but the opportunity to see it does not occur every day. This arises from the fact of its being one of those plants that in pots are only seen in perfection with a really good "plantsman." Being a vigorous subject,

it requires to be planted out in the bed of a warm conservatory, or some house, the winter temperature of which is somewhat higher than that of the greenhouse, and there, with a mere tithe of the trouble it requires in pots, it will give perennial satisfaction. There is a plant of it treated thus in one of the glass houses in the Royal Gardens at Frogmore, and from it every year are cut about one hundred trusses for Christmas decoration, for which purpose they are certainly the best, and at present among the rarest of flowers. At Little Dalby Hall, near Melton Mowbray, there is also a fine specimen of this superb winter-flowering plant. It has been planted out in the conservatory for years, and all the trouble it requires is to cut it back every spring and give its roots an occasional top-dressing.

CYCLAMENS.

These are invaluable for winter and spring flowering. The seed should be sowed every year, carefully selecting the brightest coloured and best habited plants for that purpose. Sow it in November in pans of light earth, placing them on a shelf in the propagating house until the seedlings are fit to plant out. Only a dozen or a dozen and a half of seeds should be placed in each pan, dibbling them into the rich earth at regular distances apart; this is much better than sowing thickly, as the plants can remain until they attain a considerable size before they are planted out. Early in March get a dung-bed made up, on which place a couple of two-light frames, and cover the dung with 6 or 8 inches of rich compost. They like a compost of fibrous loam, leaf-mould, and sand, with the addition of a little peat and rotten dung. After the first flush of heat is over, prick out the plants 6 inches apart, and here they are grown on during the summer, giving air and occasionally a little clear manure-water as required. The secret in Cyclamen growing is to grow them on rapidly from the seed-pan to the flowering stage without a check. At the end of the summer the bulbs should be large and well ripened. These should be carefully removed from the beds and potted into 48-sized pots, after which plunge them in a gentle bottom heat, and, when they have become established, remove them to their flowering quarters. Grown in this way one-year-old seedlings often produce from thirty to fifty flowers on a plant.

EPIPHYLLUMS.

These are simply invaluable for winter flowering, and are easily cultivated, either on their own roots, or grafted on stocks of the common *Pereskia aculeata*. Mr. Speed grows these plants at Chatsworth by the hundred, and uses them largely in the great conservatory, where, in hanging baskets (for which they are admirably adapted), mingled with Ferns and drooping trailers, they light up the place all through the winter with their orange-scarlet or bright lilac-purple flowers. They strike readily from leaves taken off during the summer and inserted in a cutting pan surfaced with sand; after which they may be potted in sandy loam, sand, and leaf-mould, and grown on a shelf close to the glass.

VARIOUS WINTER DECORATIVE PLANTS.

Among these may be mentioned Primulas, double and single Cinerarias, Hyacinths, Acacias of various sorts, forced Roses, *Helleborus niger* in variety, *Deutzias*, *Spiræa*, Azaleas, Lily of the Valley, white and pink Hawthorn, *Narcissus*, and *Tuberoses*. We have obtained our stock of forcing plants from Belgium for several years, and generally get good quality for our money. Lilacs, *Dielytra spectabilis*, *Spiræa*, and Lily of the Valley we have in flower for four or five months without intermission. These are always useful, either as decorative plants in pots, or for furnishing a good supply for bouquets and "button-holes." A few good plants of winter-flowering Carnations, placed in a warm sunny corner of the greenhouse or Vinery, produce enormous quantities of choice deliciously-scented flowers for cutting for indoor decoration. *Thysanacanthus rutilans*, *Ipomæa Horsfallia*, bright-leaved *Dracænas*, sundry Orchids—among others, *Lælia albida*, *Oncidium pulchellum*, *Calanthes* in variety, *Odontoglossum Cervantesii*, *Lycaste Skinneri* (one of the finest of Orchids, which flowers for a long time in the drawing-room without protection); and the *Cypripediums*, of which the old *insigne* also blooms a long time, are perfectly at home in a drawing-room. Doubtless the same may be said of many other Orchids, when they are sufficiently plentiful to be

extensively tried in this way; but the very best for this purpose is the old *Dendrobium nobile*, which, if grown well, bears hundreds of its white and purple flowers during winter and spring, as also does *Phajus grandifolius*. Of Heaths, *Himalis*, *Elegans*, *Melanthera*, *Scabriuscula*, and *Colorans* are about the best for Christmas; and of the *Epacris*, *Vesta*, *The Bride*, *Alba odorata*, and *Variegata*. One bulb is so peculiarly suited for the most exquisite groups of Christmas flowers, that we hesitate not to make a special pleading for it. It grows about a foot high, and bears flowers of a peculiarly rich yellow, tipped with green. The coloration is so distinct that the plant would be attractive, no matter how the flowers were attached; but when we say that they droop more gracefully from their slender foot-stalk than the *Snowdrop*, those who do not know the plant will have some idea of the singular attractiveness of *Urceolina aurea*. *Sparmannia africana* is an effective winter-plant when grown on from cuttings, and kept in small pots. A few good plants of *Camellias*, planted out in the conservatory, keep up a good supply of cut blooms after Christmas, but a few plants of the Double White and *Candidissima* should be forced for early bloom by placing them in an early Vinery directly the last flowers are cut from them in November and December. *Eucharis amazonica* should be grown by the dozen, as it blooms at any season, when required. We have, moreover, many pretty free-flowering hardy plants that bloom during the winter and spring, such as *Snowdrops*, *Crocuses*, *Iberis gibraltarica*, *I. sempervirens*, common Wall-flower, in dry sunny positions, Christmas Roses, purple, blue, and rosy *Hepaticas*, sweet-scented Violets, and *Primulas* in variety. *Chimonanthus fragrans*, *Jasminum nudiflorum*, and *Berberis Darwinii* bloom freely during winter, trained on a sunny wall, or planted in a warm sheltered border, while *Pompones Chrysanthemums*, grown in quantity, come in very handy for plunging among the dark shrubs in the flower-beds nearest the mansion, about November and the beginning of December, if the season is mild.

CHRISTMAS EVERGREENS.

For Christmas decorations we have the deep perpetual verdure and the cheerful berries of *Cotoneasters*, *Skimmias*, *Hollies* in variety, *Aucubas* in fruit, *Cratægus Pyracantha*, and other bright berry-bearing shrubs. These are so particularly useful that it is an excellent plan to grow them in pots, so that they may be removed and grouped anywhere without injury, and be also kept dwarf and neat. Of course the coral-garnished spray of such plants may be tastefully used in wreaths, and amongst cut flowers; but a far higher use might be made of groups in pots, not only occasionally in the house, but plunged in beds in the open air near it, and even used in boxes on the outer sides of the windows. We have seen most chaste and attractive boxes of this kind filled thus. These of course may be kept growing, plunged in some by-nook in summer; and even at that season they will be found occasionally useful. In addition to those used for their berries alone, we need scarcely add that there are many which deserve attention on account of their lustrous health and verdure in winter, and which are peculiarly fitted for associating with those just named—such as the *Minorca* and other Boxes, the *Laurustinus*, *Berberis Darwinii*, *Rhododendrons*, and hardy Azaleas, many Japanese shrubs, and dwarf Conifers introduced of late years, including a group of nicely selected silver *Hollies*, which are, moreover, very effective by gas light. One shrub we should never fail to be without in pots or tubs, and that is the *Laurustinus*. The warmth and protection of a conservatory or cool glass house in winter induces it to bloom as vigorously and sweetly as a May flower. Wherever standard evergreens are grown in tubs for placing out of doors on terraces in summer, this should be grown as a standard, as it may be enjoyed in winter for its flowers, and in summer for its foliage alone, like Bays and other plants grown as standards; but it is well worth growing for its winter uses alone. In cutting from shrubberies or groups for indoor embellishment in winter, to the above the *Arbutus*, and the *Euonymus europæus* may be added. It may be worth noticing that some evergreens, like Laurels, &c., may prove highly effective in church decoration or the like, and yet be rather coarse and out of place in rooms, and especially in small rooms. To the plants used in pots for the sake of their

berries, might be added the *Solanums Capicastrum* and *Pseudo-capsicum*, the *Ardisias*, *Rivina humilis*, and dwarf Oranges where they are grown well in small pots. We need hardly say that groups of the most charming character may be formed of the hardy plants above mentioned, with the symmetrical and elegant little dwarf Pines and neat evergreens; and, as the greater number may be grown almost without any protection, they are doubly valuable.

As this is the time for arranging plans for winter, the above hints may be useful, the dull winter months most requiring the Gardener's art to make them as cheerful and as enjoyable as possible.

A.

THE VICTORIA REGIA.

In the year 1842 it was my good fortune to behold this wonderful production of nature in the river Rupununi, one of the great tributaries of the Essequibo. After a toilsome struggle of six weeks in ascending the Essequibo we passed the last cataract, and we were truly thankful to the Almighty that it had pleased Him to allow us to reach their termination without accident; and many an anxious moment we had during our ascent of this noble river, which, in the number and height of its cataracts, surpasses any river in British Guiana. We entered the Rupununi, and three days after (as if we should be rewarded for our previous sufferings on the Essequibo) the Rupununi, on its right bank, expanded into an extensive bay. It was an enchanting scene. So enchanting was the view that unfolded to our eyes that we were at a loss where to commence, in order not to overlook any object in this lovely picture, the most prominent of which was the *Victoria Regia*, which I had longed so much to behold. The margin of this bay was bordered with this magnificent plant. The grandeur of tropical scenery was here the most striking and the most sublime I ever had as yet seen. The numerous Palms, *Uranias*, with their wide-spreading leaves, gigantic trees around raised their lofty crowns to an enormous height, displaying the greatest contrast in form and appearance of their foliage. Lianas clung to their trunks, interlacing their wide-spreading branches, and having reached their summit, aerial roots descended again to the ground, and appeared like the cordage of a ship. Nature, not satisfied with the soil allotted to her, had decorated the trunks and limbs of trees, even the surface of the water, with a carpet of plants, interspersed with these magnificent flowers. Twenty-eight years have now elapsed since this lovely picture unfolded itself before my eyes, but it is still as fresh in my memory as if I had seen it but yesterday. Long before we reached the bay the eastern breeze wafted the delightful odours towards us. The whole margin of this bay was bordered with the gigantic leaves of the *Victoria*, interspersed with the magnificent flowers, of all shades from white to pink, scenting the air with their fragrance. On the leaves many aquatic birds were running to and fro, chasing the numerous insects which were humming around the brilliant flowers. I may observe that we stopped many hours to enjoy this sublime picture, and that our pencils were soon engaged in transferring to paper this striking feature of this remarkable spot. We rowed from one plant to another, finding everywhere something to admire, and measuring the gigantic leaves and flowers. The largest of the former was $7\frac{1}{2}$ feet, the largest of the latter 14 inches in diameter. I never was anywhere more forcibly impressed with the thought that the productive powers of Nature, on receding from the pole, had collected themselves in their greatest strength near the equator, spreading their gifts with open hand and manifesting the abundant fertility of the soil.—*Dr. R. Schomburgk.*

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

The Cobweb Houseleek as a Window Plant.—I have just seen a fine example of this plant growing on the outside of a cottage window, near Bromley. It had grown so well that the rosettes crowded over and fell to the edge of the saucer in which the pot stood. This interesting Alpine plant then may be grown as easily as any common window plant.—W. R.

***Oncidium tigrinum*.**—This has been recently imported by Messrs. Backhouse & Son, of York, who showed a fine specimen of it in flower at Bath the other day. It has large shining pseudo-bulbs, bearing two or three oblong leaves, and its flower-spikes are branched, bearing from five to thirty or forty flowers. The sepals and petals are pale greenish-yellow, heavily blotched transversely with brown, the broad lips being of a very soft lemon-yellow. This plant is sure to become a favourite with Orchid growers. Its synonyms are *O. Barkeri* and *O. fumeum*.

***Blandfordia Flammula*.**—A fine plant of this was exhibited by Mr. R. T. Veitch, at the Bath Show, and was much admired. It bears tall spikes of pale buff or orange-yellow flowers. The foliage is terete, glaucous, and grassy in appearance, and well grown plants of it, bearing six, or eight strong spikes each, are very ornamental. *B. Cunninghamii* is another fine species, bearing larger flowers of a deeper orange, or orange-scarlet, than those of *Flammula*. All the species grow well in fresh turfy loam, leaf-mould, and sand; they require a good supply of water, and a cool bottom.

THE PROPAGATOR.

GRAFTING FUCHSIAS.

I HAVE not hitherto seen the operation of grafting performed on the *Fuchsia* elsewhere than at the Royal Horticultural Gardens at Chiswick, where Mr. Spinks has performed some successful experiments in this way with that shrub. He has worked red varieties on white ones, thus producing the novelty of making the same plant carry two distinct colours, but I am not sure that operating in that manner is, in connection with the *Fuchsia*, really the most useful purpose to which grafting can be put. I should rather conclude that if standards, composed of heads of some of the best and most effective of the golden or variegated-leaved kinds, such as *Pillar of Gold* or *Sunray*, worked upon stout, quick-growing stems of some common kinds, could be had in abundance, they would join at the same time both excellent decorative and exhibition plants, and it is most probable that, as the variegated sorts are usually of somewhat moderate growth on their own roots, they would develop stronger and more rapid growth when worked on robust growers. In no other way could they display their beautifully tinted foliage more charmingly than as standards, the shoots being allowed to grow in a drooping form, and with that peculiar gracefulness that should always characterise a good *Fuchsia*. Mr. Spinks employs the wedge form of grafting the part of the stock worked, the scion being as equal in size as possible to the stock. The stock should be cut short off about an inch above a leaf joint, and then split with a sharp knife down the middle to the joint, beyond which the split will not pass unless additional force be applied. The graft should consist of nice young green wood, and when inserted should be carefully bound with a fine piece of bast matting, and also kept moist by means of a piece of moss tied over the junction. The plants worked should then be placed in a gentle heat, and should be shaded, and under these conditions a perfect union between graft and stock is secured. Where a dark-coloured kind is worked on the top of a light one, or *vice versa*, to form a pyramid, a moderate growing kind should be selected for the graft, as the top of a plant is sure to receive the largest portion of sap. There is also no reason why, with care in the selection of kinds, some six or eight sorts might not be worked on to the side shoots of one big plant.—A.D.

Curious Fact in Cross Fertilisation.—At a meeting of the Academy of Natural Sciences of Philadelphia, Mr. Thomas Meehan made a curious and important observation. Mr. Arnold, of Paris, Canada, lately determined to observe the effect of cross-fertilisation on Indian Corn. He procured a very peculiar variety, of which Mr. Meehan exhibited an ear, not known in the vicinity—a brown variety, with a circular dent on the apex, and raised one plant from it. The first set of flowers were permitted to be fertilised by their own pollen, in order to test whether there was any reversionary tendency in the plant, or the pollen of any other variety in the vicinity. The ear now produced was the result, every grain being like its parents. The Corn plant produces two ears on each stalk. As soon as the "silk" (the pistils) of this second year appeared, the pollen, in a "tassel," of the common yellow Flint Corn was procured, set in a bottle of water tied near the developing ear, the plant's own tassel having been cut away some time previous. After a short time this set of male flowers was removed, and a panicle of male flowers from a white variety was introduced to the same bottle, in order to afford it the opportunity of operating on the same female flowers. The result was the ear now presented. The base of each grain was of the yellow Flint Corn, but the upper half of the white variety. The result was, he thought, no escape from the conclusion, not only that there was an immediate influence on the seed and the whole fruit-structure by the application of strange pollen, but the still more important fact, hardly before more than suspected, that one ovule could receive and be affected by the pollen of two distinct parents, and this, too, after some time had elapsed between the first and second impregnation.—T.

NOTES AND QUESTIONS ON PROPAGATING.

Grafting Wax.—Referring to a recipe, which appeared some time since in a horticultural journal, for making grafting wax "similar to the celebrated *Mastic Lhomme-Lefort*," and which, among other ingredients contained turpentine, M. Carrière warns his readers against the use of this ingredient in such compositions. It is, he says, most pernicious in its effect on the graft. The proper solvent to employ is alcohol.

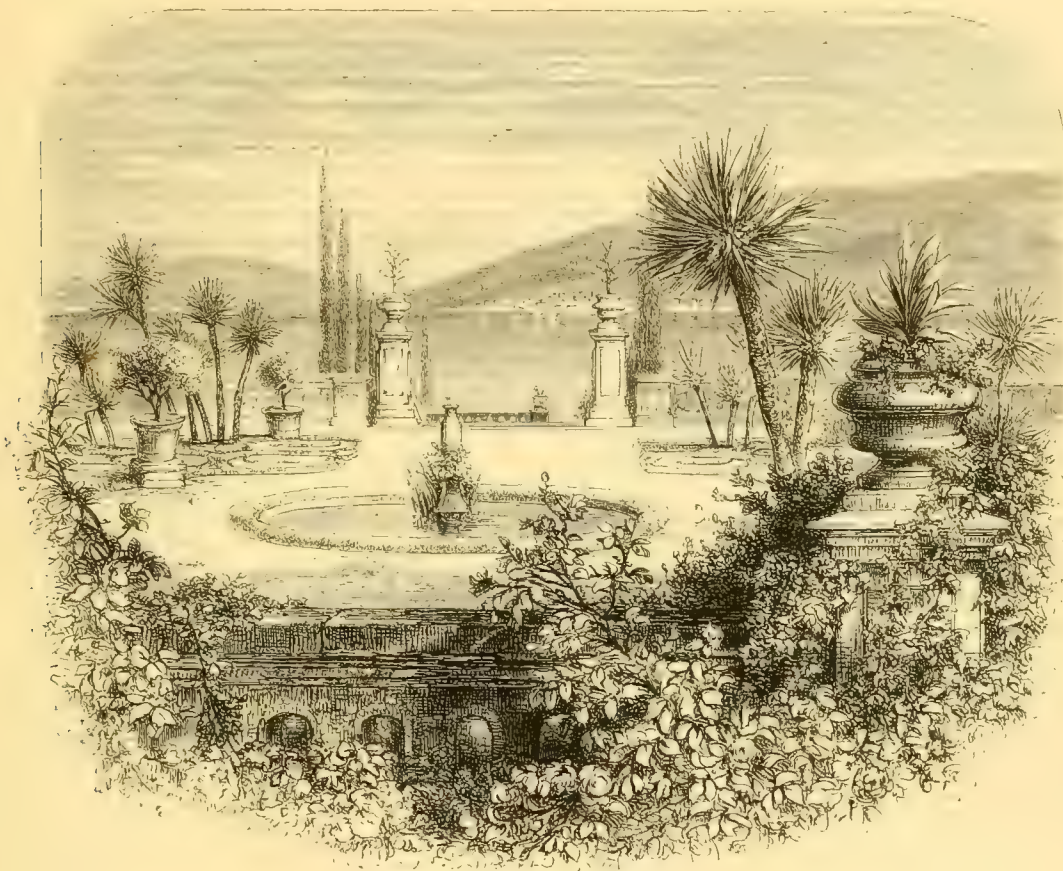
Grafting Mice-Girdled Trees.—At page 337 of *THE GARDEN* we gave a description and illustration of an effective mode of preserving mice-girdled trees, which is much employed in America. We find in an American paper the following improvement on that plan suggested. The connecting piece, after being shaved on its inner face, and cut the exact length, is nailed in instead of being tied. It is therefore firmer, and we think this an advantage.

ISOLA BELLA.

AMONG the beautiful lakes in the north of Italy, the Lago Maggiore is perhaps the most lovely. That region of lakes and mountains, interspersed with fertile plains sheltered by the great wall of the high Alps, was a favourite resort of the wealthy Romans of the Imperial period. In that attractive region Pliny had his charming villa, of which he has left so many interesting particulars in his well-known letters to a number of Roman dignitaries of his day, including the Emperor Hadrian himself.

There are two beautiful islands in the Lago Maggiore which artists, for the last century at least, have delighted to study and depict; one is the Island of the Fishermen, the other is known as the Isola Bella. No stronger contrast could exist than that between these twin islands of the blue Italian lake. That of the Fishermen is crowded to the very highest part

luxuriantly as might have been expected. There are portions of the gardens in which a certain kind of wildness is affected, with imitations of Roman ruins, and other features of the kind so frequently found in modern Italian villas. All this sounds well, and the features alluded to accord with Italian scenery characteristically enough; while the Cypresses form, as they do in all garden landscape in Italy, a feature of never-failing charm, shooting up their dark green pointed shafts into the unbroken azure of the sky; but altogether, on my first visit to the "Isle of Beauty" I must confess to having experienced a feeling of great disappointment. I had seen Stanfield's pictures of the Isola Bella, in which she had sat to him under her most fascinating aspects of atmospheric effect, and well-selected points of view, and I must say that the reality fell far, very far, short of the spell which the magic of the artist's pencil had cast about it; here veiling the outline of a sharp promontory, and



Garden view in Isola Bella.

of its steep rocky sides with picturesque little dwellings, gleaming white against the purple sky, while trailing Vines, half wild, knit the picture together, which is crowned, exactly in the right place to balance it, by the ancient church tower. The Isola Bella, on the contrary, is all culture, being crowded with vase-bearing pedestals, long lines of ornamental balustrading, and architectural flights of steps from one level to another of the exceedingly uneven surface of the island; the small surface of even ground being occupied by the pretty palace-villa which is the summer retreat of Count Borromeo, of the ancient Milanese family of the famous canonised Bishop, St. Carlo Borromeo, whose tomb is one of the chief sights of Milan Cathedral, and is so eagerly visited by tourists of all nations. The remainder of the more level portions of the island are occupied principally by small geometric gardens, interspersed with Orange trees and several kinds of Palms, which, however, do not flourish so

there bringing into high relief some favourite piece of combined art and nature, with the consummate taste that we know so well. These works of our great painter had filled my mind with impatient longing to tread the shores of the Isola Bella, and when at last I accomplished the wish, it was with depressing regret that I found the reality so far below the celebrity that has so long clung to the place, and the pictures that have been painted of it. It wanted the sweeps of soft green turf which are such a delightful, and to an English eye, essential feature in the home landscapes of a pleasure garden. It wanted the high keeping which is almost invariably found in places of that degree of pretension; and lastly, the ambitious attempt to introduce tropical plants and trees, even in Italy, and with the Alps close at hand to screen the island from the cold blasts of the north, is certainly a failure, as few of them appeared to me to be enjoying themselves, and many looked decidedly wretched in their unavailing attempts to accommodate them-

selves to an unpropitious climate. In short, given the climate of the Lago Maggiore, such as it is, the beauty of the surrounding scenery, with the pretty town of Baveno seen in the distance, with all the other favourable adjuncts, I believe I could name, in a breath, half a dozen English landscape gardeners, who would find it no difficult task to transform the so-called Isola Bella really into a thing of beauty, as superior as possible, in every respect, to its present somewhat unsatisfactory aspect, which has far too much of what we call the "Cockney school" about it, in the vast profusion of its trivialities. As one of the "celebrated" gardens of Europe, we have given a representation of it in THE GARDEN, but not so much as a model of a good style in horticultural art as, in the main, a sort of thing to be carefully avoided.

H. N. H.

THE FRUIT GARDEN.

THE MISTLETOE AS A TREE PEST.

MR. LEES says, in the *Botanical Looker-out*, that the most remarkable circumstance in the history of the Mistletoe is its mode of growth. It is invariably found flourishing upon, and imbibing its support from, the juices of some tree; it has never been met with attached to earth, nor can any treatment induce it to grow there. It is therefore termed by analogy a parasite. In this view, then, the Mistletoe is to be distinguished from the Ivy. The latter, it is true, will embrace forest trees in too tight a grasp to be healthful; but the creeper is not nourished by the tree on which it climbs, for, although in the case of the Ivy there is reason to suppose that it may derive some nutrition through its aerial roots from the decaying bark of the supporting tree, yet it is in reality a plant with its own independent terrestrial roots, and will climb up banks and walls as readily as upon the trunks of trees. It, therefore, can only do harm by compression, being mechanically supported by the tree as a kind of prop, but not in return venturing to

Suck the verdure out on't.

For our present purpose, then, we shall view the Mistletoe as one of the true parasites—namely, as feeding on the juices of living plants, both they and their foster-parents being flowering plants. Such are the dodders and broom-rapes, but the Mistletoe differs from these in that it has its own true leaves. The Mistletoe (*Viscum album*) belongs to the Linnaean class *Diœcia*, order *Tetrandria*, and the natural order *Loranthæ*, so that in fact it is a high-born flowering plant, and, it is needless to say, is reproduced from seed, the quantity of fruits on a female plant in its silvery berries fully testifying to its fecundity in this respect. Much discussion has taken place as to how the seeds of Mistletoe get attached to the foster parent. Dr. Bull, in his elaborate paper on this plant, says: "It has been supposed that the glutinous berries stick to the beaks of the birds that eat them, and as they clean their beaks on the neighbouring trees the seeds are sown: a view," he adds, "it is sufficient to say, which supposes that the birds don't know how to eat the berries they like so much." There can be no doubt that the mistle-thrush and other birds are fond of the berries; but that they do not for the most part digest the cotyledons is certain, as these pass off in the ingesta, and if procured afford a ready method of propagating the plant, by fastening them to the bark of a tree on which you wish Mistletoe to grow—a fact quite in accordance with the old doggerel, which also refers to the former use of the berries in making bird-lime:

The thrush when he pollutes the bough,
Sows for himself the seeds of woe.

But, however the parasite may be propagated, it seems to favour certain trees to a great extent, while there are some trees upon which it does not seem capable of making a home at all. Again, it is influenced much by climate. It is rarely met with north of Worcestershire; it is most abundant in the western counties, as Hereford, Worcester, and Gloucester, though in the latter very rare upon the Cotswold Hills; it often occurs in the southern counties, but by no means so frequently as in the west. Hence for the northern and eastern counties Mistletoe is an article of commerce at Christmas time. Dr. Bull estimates the quantity invoiced from Herefordshire in December of 1863 at 89 tons! and he adds, "But guards and engine drivers had the privilege of exporting Mistletoe on their own account, and did so by almost every train that left the county during the early part of December." The north is mostly supplied from Hereford and Worcester, while Gloucester seems to be the grand emporium whence this plant is forwarded to the London markets; and, judging from what we have witnessed in the markets

of Worcester and Gloucester, the deportation of Mistletoe from these cities would even exceed that from Herefordshire.

As regards the frequency of the Mistletoe on various trees, we would refer to the following table by Professor Buckman:

Trees.	Counties.	Comparative frequency.
Apple	Worcester, Hereford, Gloucester	50
Pear	Hereford (E. Lees)	1
Whitethorn	Worcester and Gloucester	15
Black Poplar	Worcester and Gloucester	20
Aspen	Longdon Marsh, Worcester (E. Lees)	1
Robinia	Gloucester	2
Willow	Gloucester	5
Maple	Gloucester and Worcester	10
Sycamore	Cheltenham	1
Ash	Worcester and Gloucester	2
Hazel	Worcester and Gloucester (E. Lees)	1
Medlar	Near Tewkesbury (E. Lees)	1
Oak	Frampton on Severn, Gloucester; Malvern, Worcester	2
Birch	Forest of Dean	1
Lime	Gloucester and Worcester	3
Mountain Ash	Near Ledbury (E. Lees)	1
Whitebeam	Chepstow (E. Lees)	1
Elm	Near Tewkesbury (E. Lees)	1
Hickory	Gloucester (— Miles, Esq., M.P.)	1

It has besides been noted on several other trees; but the mention of the above will suffice for our present purpose. Seeing, then, that the Mistletoe is parasitic upon so many trees, it will be well to inquire the effect it may have upon its foster parents. Dr. Harley, speaking of its effects upon trees in general, gives our parasite the following character:—

The infested branch assumes various contortions, being twisted sometimes in one direction and sometimes in another. It is frequently found bent at right angles to itself; but it wrestles in vain with a veritable Hydra, which, having killed its centre, spoiled and occupied its bark, and invaded anew the little living wood that remains, now gradually completes the work of destruction. While the Mistletoe is thus affecting the branch in its immediate neighbourhood, it is producing, by intercepting of its juices, atrophy of that portion beyond it. With the increase of the parasite, this interception becomes complete, and the atrophied portion of the branch dies.

On this same subject Dr. Bull comes to a like conclusion. He says:—

It is a remarkable fact that when the Mistletoe has once established itself on any kind of tree (the rule holds equally good for those it but seldom inhabits), it frequently grows on several branches at the same time, as if the tree no longer possessed its original power of resisting the intruders. The tree shows it too, and soon puts on a desolate woe-begone look, with fading leaves and dying branches. It is thought that the Limes in Datchet Mead—a place often mentioned in the "Merry Wives of Windsor"—gave Shakespeare the illustration embodied in these lines:—

Have I not reason to look pale?
These two have 'ticed me to this place,
A barren, detested vale you see it is:
The trees, though summer, yet forlorn and lean,
O'ercome with Moss and baneful Mistletoe.

But with all this there has ever been a difference of opinion respecting the effects of this parasite upon fruit trees. Some farmers tell us Mistletoe does no harm, as they frequently find that trees on which it is found uniformly produce something like a crop, and that the Apple wine—cider—made from them is of the best. In such cases, then, we may probably conclude that the parasite has acted much in the same way as the pruning knife; but, unfortunately, it lacks the intelligence which should guide the orchard cultivator.

Professor Buckman, in an article in Morton's *Cyclopædia*, takes the same view; he says:—

The Mistletoe, from its effects, must be ranked amongst weeds. Much difference of opinion exists as to the character of this plant, which seems to arise from the fact that in orchards where the trees are laden with the parasite one often finds the best crop of fruit; so that a superficial view of the case would almost lead to the conclusion that an old Druidical blessing resided in the Mistletoe. But if we examine the branch immediately above where the parasite has been flourishing, we shall usually find it but a withered limb; and there can be but little doubt that the reason trees affected with the plant often fruit so early and so well, is on account of their being brought to premature old age; and most careful examination of orchard and other trees on which Mistletoe has flourished leads to the conclusion that, if we would have our trees healthy and well developed, the parasite should not be suffered to grow on them. A tenant farmer may be careless about Mistletoe taking a position in a young orchard, as it may hasten the fruiting season; but the owner of property should see to its removal, as it will materially injure the vigour of the constitution, and consequently hasten the extinction of the life, of his trees.

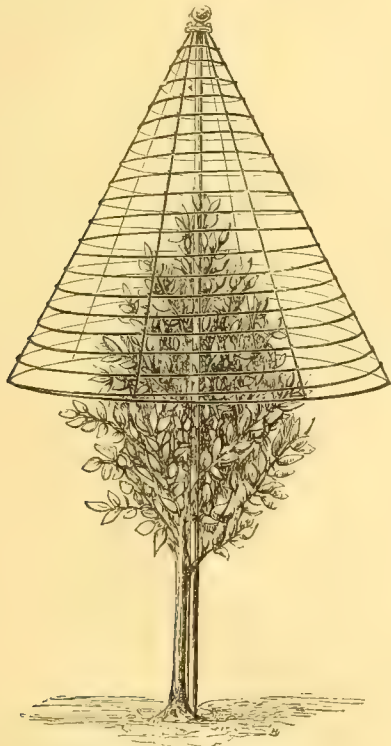
GALVANIZED FRUIT TREE COVERS.

UNDER the above name, Messrs. Barnard, Bishop, & Barnards, of Norwich, have introduced contrivances, of which the annexed are illustrations, for protecting fruit-trees when in flower, from spring frosts, by throwing a tiffany cover over them; or they may be used to protect small trees from birds during the fruiting season. They are made of various sizes,



Galvanised umbrella-shaped tree cover.

and are light and elegant in appearance. Covered with tiffany or with oiled paper, these covers may also be used to protect Rose blooms for exhibition, and other florist's flowers, as they can be used with stakes of any length; or even without stakes in the case of dwarf plants requiring temporary protection. When not in use as fruit-tree protectors, they might be utilised as trellises on which to train half-hardy or



Galvanised pyramidal tree cover.

hardy climbing annuals, such as *Tropæolums*, *Convolvulus*, *Canary flower*, or for climbing greenhouse or hardy shrubs. A glance at the accompanying illustrations will show how these contrivances are applied; they are moderate in price, and admirably adapted to fulfil the purpose for which they are intended.

B.

FIG CULTURE.

Figs may be propagated by means of layers or cuttings, a foot or so in length, made of the most fruitful and well-ripened shoots, struck in bottom heat, from which fruit may be obtained the second or third year. The most suitable soil for Figs is fresh loam of medium texture; and when they are planted against a good wall, the border should be 2 feet deep and 15 feet wide, resting on a perfectly dry bottom; for, although the Fig is fond of moisture, it does not thrive in a wet soil any more than in a very dry one. The warmest position on the wall should be given it, and, when the border requires enriching, it should be done by means of manure water. In pruning, the knife is only required (if proper attention has been paid to the stopping and thinning of the shoots with the finger and thumb, in May and June) for cutting out worn-out branches. Towards the ripening season, a leaf or two near the fruit may be taken off, and, previous to covering up in winter, the trees should be divested of all green fruit, as it is only those which are just observable then that ripen at all. The covering which I use is mats or canvas, and, from the ease with which they are made to suit the weather, I prefer them to any other material. I have found the trees to do well trained fan-fashion, and when the fruit is ripe it should be gathered in the morning and used the same day. When forced Figs may be made to ripen two crops in a season, I would commence with a temperature of 45°, allowing it to range progressively from that up to 80°. A moist atmosphere during the forcing season is indispensable; and I would occasionally sprinkle the leaves until the ripening season, when water must be withheld. I have taken two crops in the year from trees planted out in pits 6 feet wide and 2 feet deep, in the kind of soil already recommended, keeping the roots in all cases from penetrating too deeply. When the borders are stirred, it should be done with forks rather than the spade. The varieties which I grow are the *White Marseilles*, a hardy and good bearer, suitable for forcing; *Black Ischia*, a finely-flavoured kind and a good bearer, suitable for forcing; *Brown Ischia*, also first-rate; *Brown Naples*, a valuable kind, owing to the length of time it yields its fruit; *Large Blue* and *Long Purple*, both excellent; and *Lee's Perpetual*, a fine sort, well adapted for forcing. The *Brunswick* is also worthy of cultivation, being large and of excellent flavour.

M.

Green Gooseberries.—"The good die young"—"especially in the season of green fruit," adds a Transatlantic observer. This is, indeed, true of the small human subject who invests his scanty pocket-money in the green Gooseberries which now load the too handy barrow of the costermonger. The reverse is the case with the Gooseberry itself, which can hardly be too ripe to be good. This fruit is upon the whole rather hardly used, the necessity for pies and tarts at this time of the year having induced the practice of growing the Gooseberry chiefly to be gathered in an unripe state. It may, however, be considered a peculiar English fruit, since though positively not a native of Britain, our climate and soil suit it to perfection and its cultivation has been more attended to in Lancashire than in any other part of the world. The largest Gooseberries produced in that county in the middle of the eighteenth century scarcely weighed more than 10 pennyweights, whereas the prize Gooseberries reared there now sometimes exceed 30 pennyweights. A good deal remains to be done for the cultivation of the Gooseberry, some foreign varieties of which, American and Siberian, would be well worth importing; but there is little hope for it as long as we only care to make a fool of it.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Roof-trained Peaches.—I wish you could now see our ordinary lean-to Peach house, the roof of which is nearly covered with *Royal George*, which is literally studded with fine fruit, just getting ripe, each averaging 7 or 8 ounces in weight, and beautifully coloured. This plan (the old one) of growing Peaches and Nectarines I think you will admit to be still the best.—P. G., *Culford*.

Vines in Rock-Borders.—(See p. 482.) Where does your correspondent, Mr. Joyne, who writes on this subject reside, and what is the character of the rock to which he refers?—M. [Mr. Joyne writes, "your correspondent will probably obtain sufficient information concerning the rock in question, if you tell him that I live at Bourton, six miles on the London side of Swindon, on a little heap of rock, washed up near to the foot of the White Horse. It consists very much of petrified oysters, cockles, mussels and various other kinds of shell-fish. I am now cutting Grapes, from Vines grown in this rock-border, as wanted. We do not boast of large bunches, but we are well satisfied with what we have, and which are so cheaply obtained. My ideas about Grape growing are very different now from what they were when I came here some years ago.]

THE GARDENS OF ENGLAND.

SYON HOUSE.

AMONG gardeners, who has not heard of Syon House, the princely residence of the Duke of Northumberland, situated on the banks of the Thames, and remarkable for its many noble trees? Even as far back as the beginning of the sixteenth century Syon was a celebrated plant place, a character which it has well sustained; for here it was that the first Cocoa-nut fruited in England in 1864, and here, too, the Royal Water Lily (*Victoria regia*) amazed the world with the beauty of its flowers, and the size and luxuriance of its leaves. The Mangosteen and other tropical fruits of many kinds used to be grown at Syon; but their cultivation has, to a great extent, been discontinued.

THE CONSERVATORIES.

These form a noble range of glass, set off by a lofty dome in the centre, and, as will be seen by our illustration, have an elegant outward appearance; nevertheless, within, with the exception of the central and two end divisions, they are inconvenient, the staging being so narrow and high that only small plants can be accommodated on it. The cupola, or dome, is 60 feet in height, and the length of the whole range 380 feet. The solid parts consist of Bath-stone, the roof, columns, and arches being iron, and the whole of the front is glazed with plate glass, as well as some parts of the roof where strength is required. At one time this conservatory range was heated by means of steam, when two miles of piping were used; but steam has long since been superseded by hot-water. The extreme end divisions are devoted to large Acacias, Azaleas, Camellias, Oranges, and similar plants. There is also amongst them a very large plant of the Loquat, a fine specimen of *Clethra arborea*, with a stem 21 inches round, *Jambosa australis*, a specimen of *Pimelea elegans*, 8 feet through, a fine example of *Cunonia capensis*, and others. The central compartment under the dome is devoted to the growth of tropical plants, conspicuous amongst which is an extremely handsome specimen of the Date Palm, so tall that it nearly touches the glass. Of *Bambusa arundinacea*, or common Bamboo, there is also a fine clump, perhaps the finest of the kind in Britain, so lofty that the house can scarcely accommodate it, and its stems are much stouter than those of the plant of the same kind in the Palm stove at Kew. Of the Allspice tree there is a specimen 18 feet high, and of Fan Palms and Screw Pines there are also some very large and fine examples. Of *Sterculia nobilis* there is a tree with a trunk 30 inches round, which yearly produces a profusion of large and showy clusters of white flowers. The *Bombax Ceiba*, or silk Cotton, tree of South America has here attained a height of 20 feet, and the *Cereus hexagonus*, growing against a pillar, is about 30 feet in height. The *Astrapea Wallichii*, or Lightning tree, of the Mauritius, with large showy Cocoloba-like leaves, has here attained considerable proportions, as has also the equally large and curiously-leaved *Ficus Porteana*. The Sugar Cane also flourishes here, as does also the *Papyrus Antiquorum*, or Paper Reed, of the ancient Egyptians. Of the *Sideroxylon inerme*, or the Iron Wood, of the Cape of Good Hope, there is here a fine tree, some 25 feet in height; and of the *Citharoxylon quadrangulare*, or Fiddle Wood, there is also a large stump, 6 inches in diameter, showing the remains of what has been a fine tree; it is not dead, however, for two fine shoots have issued from it, and are growing robustly. Of the *Crinum Americanum* there is also an immense plant that blooms very freely, and of the *Morinda odorata*, or Indian Mulberry, there is likewise a fine plant, forming a very ornamental evergreen climber. Of the *Clerodendron odoratum*, *Strelitzia regina*, *Medinilla magnifica*, and other plants, too, there are many fine old specimens. The two divisions on either side of this central one are occupied by flowering and fine-foliaged stove plants, and the divisions between them and the extreme end by small cool conservatory subjects. There are several detached frames, cool and tropical pits, and forcing houses, situated in an out-of-the-way corner for the growth of plants for the decoration of the conservatories and mansion, and for affording cut flowers. In some of the forcing houses in the kitchen garden, large supplies of

flowering and decorative plants are likewise grown on for succession.

THE FLOWER GARDENS.

These are somewhat limited in extent, the principal one being that in front of the conservatories which surround it on one side, while banks of rockwork bound it on the other. Its general outline is somewhat circular, and at the intersection of two main walks near its centre it is ornamented with a fountain and basin. The flower-beds are chiefly of a longitudinal form, with a few circular ones here and there; and are for the most part confined to the margins of the walks. In addition to the occupants of these beds, which are filled with bedding, subtropical, and carpeting plants, the beauty of this garden is greatly enhanced by plants of specimen Yuccas, Pampas Grass, *Arundo Donax*, Roses, &c., dotted here and there on the grass. A low terrace wall in front of the conservatory is also very prettily decorated with dwarf climbers, such as Jessamines, Roses, Deutzias, and similar ornamental shrubs. The rockeries just alluded to consist of banks faced with blocks of stone here and there, relieved by pieces of sculpture, and portions of ancient ruins. First come the commoner Alpines and herbaceous plants, intermixed with hardy Ferns. Above these, hanging in rich festoons, *Loniceras*, *Clematisses*, *Aristolochia Siphon*, and similar plants half hide some projecting boulder, or where occupying less striking positions, owing to their great luxuriance, they form, as it were, a green network between the stems of erect-growing shrubs, protecting their roots alike from the summer's sun and from the winter's frost. Here and there, at intervals, spiral-headed trees, such as Cypresses, have been planted to break the monotony, and there also, weeping and erect varieties of Box, Laburnums, Cherries, &c., have been introduced with good effect. Supporting these, again, are masses of *Rhododendrons*, which, together with shrubs and some lofty trees, form excellent protection for the flower garden and conservatories against strong winds. The court or quadrangle inclosed by the mansion, consisting of an area of some 80 feet square, is now converted into a flower garden laid out on grass. The turf here is soft and green, and the beds are planted with the greatest care; the centre one being filled with *Rhododendrons* and the others with bedding plants.

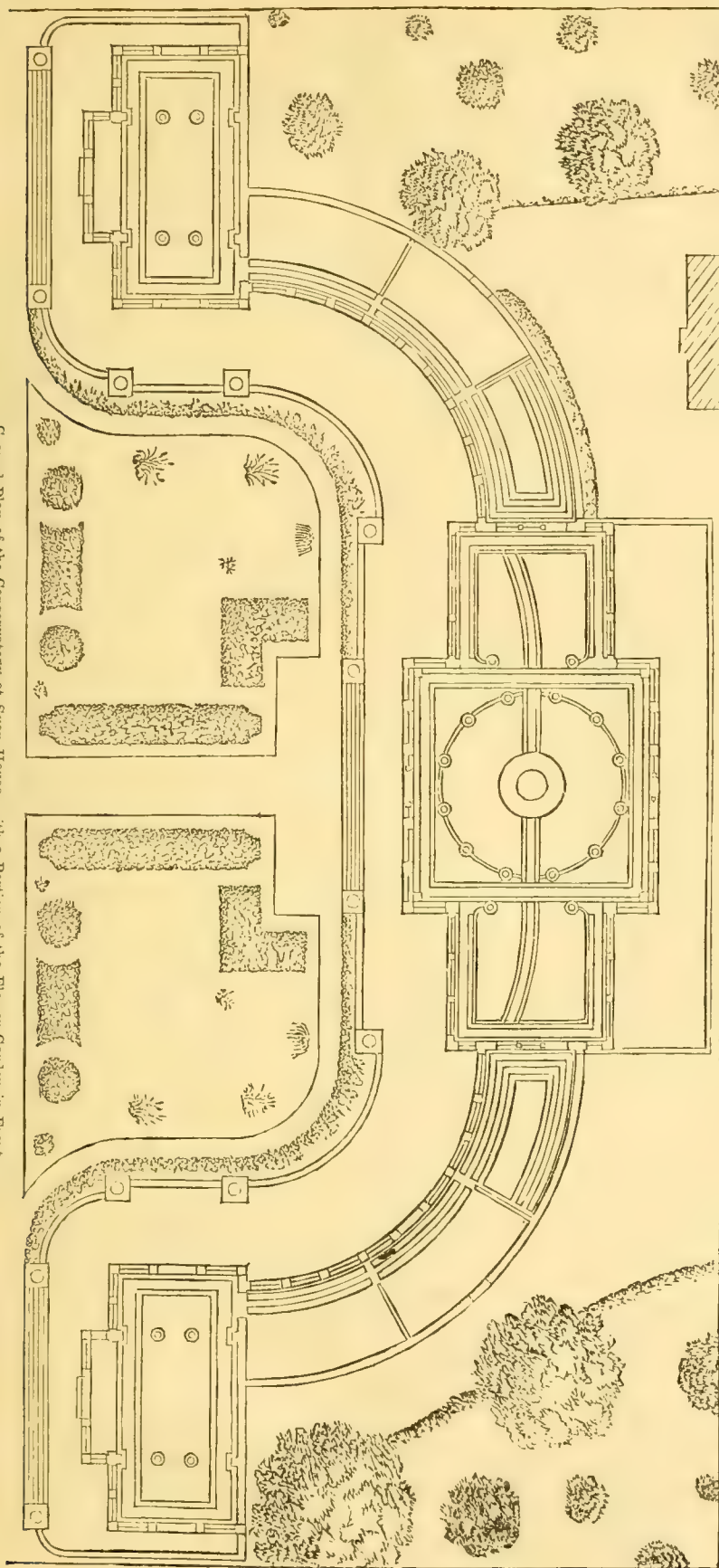
THE PLEASURE GROUNDS.

These are separated from the Thames by the "river meadow," from Isleworth by the park, and from Brentford by a wall and the kitchen garden. They were laid out by "Capability Brown," and certainly constitute the chief feature belonging to Syon, containing as they do one of the best collections of rare specimen trees in Britain, one of which—the deciduous Cypress—was figured in *THE GARDEN*, Vol. III., p. 339. These pleasure grounds, together with the house, conservatories, and flower-gardens, occupy a space of 63 acres. Throughout their extent they are traversed by winding walks, that during the past winter have undergone considerable improvement; their whole surface is covered by a thick and velvety sward, and judiciously placed in one part is an extensive lake.

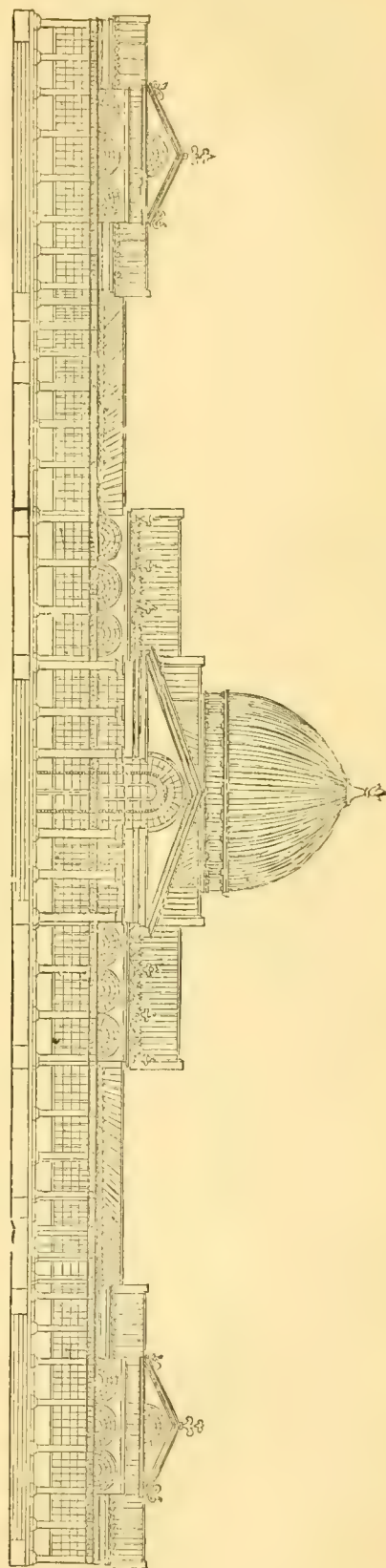
THE TREES.

The size of some of the trees here is almost incredible. Of deciduous Cypresses there are several grand examples, even the specimen just adverted to, although 84 feet in height, is by no means the largest; it is, however, the handsomest among them, and the one that has the best-developed "knees." The largest, a huge, rugged specimen, is 105 feet in height, and 12 feet in circumference, at 2 feet from the ground, a height at which all the following measurements of circumference are taken. Another tree of the same kind, scarcely so tall, measures 12½ feet in circumference. It is not the largest deciduous Cypresses that have the most or biggest "knees," for in some huge specimens the knaurs are not discernable above the ground, whilst in considerably smaller trees they are abundant, rising from 1 inch to 2 feet above the surface of the soil. Of the *Corylus Columna* or Constantinople Nut, there are some fine specimens at Syon, especially one measuring 56 feet in height, the same in spread of branches, and 7 feet in girth of stem; it is a noble plant, well branched, and forms a fine object on the lawn. Of *Liquidambar styraciflua* there are several handsome trees, one of the finest of which is 70 feet in height, and 5 feet in girth

Ground Plan of the Conservatory at Syon House, with a Portion of the Flower Garden in Front.



Elevation of the Conservatory at Syon House.



of stem, whilst the trunk is clean and unbranched for many feet in height. Here the *Salix annularis*, or ringlet-leaved Willow, is seen to advantage, for overhanging the lake are great bushy trees of it furnished with a thick canopy of curiously curled leaves. One of these trees has a trunk $5\frac{1}{2}$ feet in circumference. There is also here a very fine specimen of the *Catalpa syriaca*, the spread of whose branches is some 40 feet, and the circumference of its trunk 6 feet. It forms a striking object, being alike remarkable for its handsome leaves and for its showy flowers. Here, too, are many fine examples of the Tulip tree, some of which have trunks measuring upwards of 8 feet in girth; one in particular has attained to the dimensions of $9\frac{1}{2}$ feet. Even amid such arboreal wealth *Ilex aquifolium flavum* is one of the most striking of evergreen trees; it is about 40 feet in height and 30 feet in circumference of branches, forming a great cone, or rather dense attenuated pyramid. Indeed, the most ardent lover of formal Azalea growth has never yet been able to form such a complete and closely-set specimen as this Holly is, so compact is its growth. Poplars also form conspicuous objects in these grounds, one of the Lombardy kinds having reached the great height of 129 feet, while its trunk is 24 feet in circumference. *P. monilifera*, another beautiful specimen of Poplar, has a trunk some 15 feet in circumference, diverging into several massive boughs that have evidently suffered considerably from repeated wind storms. This tree, riven and rent as it is, makes a fine lawn ornament, its leaves being large and pretty, and its bark rough and singular in aspect. Of the *Ulmus glutinosa laciniata*, a tree grows near the water's edge that measures 71 feet in height, the spread of the branches being 90 feet, and the girth of stem 11 feet. An American Elm (*Ulmus Americana*), here has a stem some 12 feet in circumference, and forms a striking object in the landscape, as well as a fine and promising timber-tree, forming, as it does, a straight and clean bole. Common Elms likewise have attained even more massive proportions than these. Of the *Planera Richardi*, or the Californian Zelkova tree, there are here several specimens that have attained great size. One measures 75 feet in height, and 11 feet in circumference of stem; and another, having the same girth of trunk, is 88 feet in height, and 40 feet in spread of branches. These trees resemble Elms, to which they are nearly related. There is also here a specimen of the *Virgilia lutea* in vigorous health, with a trunk some $5\frac{1}{2}$ feet round, and likewise a clump of *Pavia macrostachya*, 18 feet through, which annually produces its sweetly scented flowers in the greatest profusion. In addition to many fine examples of the common Lime tree, are some of the small-leaved sort (*Tilia parvifolia*), which form nice specimens and good companions for their large leaved and more vigorous growing relatives. The *Sophora japonica* also attains immense proportions at Syon; one in particular measures 63 feet high, 12 feet in girth of stem, and 75 feet in spread of branches, which, from their weight and massive proportions, are partially detached, but are still held in position by means of heavy bars and clasps of iron. A *Robinia Pseudo-Acacia* is as large as the *Sophora*, and has an exceedingly rough bark some 6 or 8 inches in thickness. Of the Mulberry tree there is a very fine specimen isolated on the Grass near the front of the mansion: it has a trunk 11 feet in circumference, and a fine spreading, yet compact, head of branches, which are bound together by rods of iron, the area of the branches being some 43 feet in diameter, and it annually produces abundance of fruit. Mulberry trees are believed to have been planted here as early as the beginning of the sixteenth century. Some of the most beautiful little trees in these grounds are the Lenticus-leaved Ash (*Fraxinus lentiscifolia*), a few of which are planted along the margin of a little thickly-planted wood, which in spring is carpeted with Blue Bells, Primroses, and similar flowers, making it one of the most delightful spots in the vicinity. The different trees here of this species of Ash are more inclined to be umbrella-headed than tapering, and their trunks measure from 4 feet to $5\frac{1}{2}$ feet in girth. There is a nice plant of the *Laurus Sassafras* here; but the finest one, which had a trunk 10 feet in girth, has recently died, and a large quantity of suckers are now being produced from the old stool. Of *Cerasus illicifolia*, or the

Holly-leaved Cherry, we noticed a fine bush, some 12 feet through, and 9 feet high. This is one of the prettiest evergreen bushes in these gardens; and, although growing under the shade of trees, it was in the most luxuriant and thriving condition. Of the *Cercis Siliquastrum*, or Judas tree, there are some fine specimens at Syon that bloom annually in the greatest profusion; among dwarf trees, however, one of the most curious is the Snowdrop tree (*Halesia tetraptera*), one specimen of which measures 6 feet 2 inches in girth of stem, and has a wide spreading branched head some 17 yards through; every May and June, too, it bears an abundance of its Silver-bell or Snowdrop-like blooms. Of the Cedar of Lebanon there are some fine old trees here that stretch forth their ponderous boughs to an unusual distance, among them one of the most curious is one 15 feet round having a clear trunk for several yards. There are also several very fine examples of Oaks, especially of *Quercus Ægilops*, of the Turkey Oak which has a trunk 12 feet round and 80 feet high; the scarlet Oak, which is some $8\frac{1}{2}$ feet round; the Willow leaved Oak (*Q. Phellos*), which has a trunk 9 feet round; and of commoner kinds there are some much greater than these. Among dwarf shrubs, a very attractive object is the Tree Heath (*Erica arborea*), which forms a clump some 7 feet high, grows freely amongst the trees, and flowers well. Of the Cucumber-tree (*Magnolia acuminata*), there are several fine specimens, one of which has a trunk 5 feet 4 inches in girth; and of the Chicot or Kentucky Coffee-tree (*Gymnocladus canadensis*) there is a tall and bulky specimen, but its lower branches have been swept away by winds. Of *Ailantus glandulosa*, there are here some fine specimens, the trunks of which measure some $5\frac{1}{2}$ feet round, and bear branches proportionately large. Maples, Chestnuts, Planes, Ashes, purple and common Beeches, Hollies, Hawthorns, &c., are also growing in the pleasure grounds at Syon in profusion, and have attained gigantic proportions.

At the western extremity of the pleasure grounds is a walled-in rosary, in which are beds of Roses laid out on turf, and some handsome trees and shrubs, particularly a specimen of the Cork tree (*Quercus Suber*), with a trunk 6 feet in circumference, and close by is a nursery for the propagation of Roses, trees, and shrubs.

THE LAKE.

In this fine piece of water, which is of a curved longitudinal form, white Water Lilies attain the greatest perfection, and the two varieties of the yellow one vie with each other in beauty, side by side with the water Dock, which also grows here in great luxuriance. Lythrums, too, are abundant along the water's edge, as are also common yellow-flowered Irises and *Arundo conspicua*. *Carex pendula* likewise grows here extensively, and is considered to be useful for maintaining the stability of the banks. *Elymus glaucifolium* is also being planted along the banks with good effect, and *Lysimachia Nummularia* and *elegans*, together with the *Myosotis palustris*, grow naturally in great abundance on the grass by the edge of the water.

THE KITCHEN GARDEN AND FORCING HOUSES.

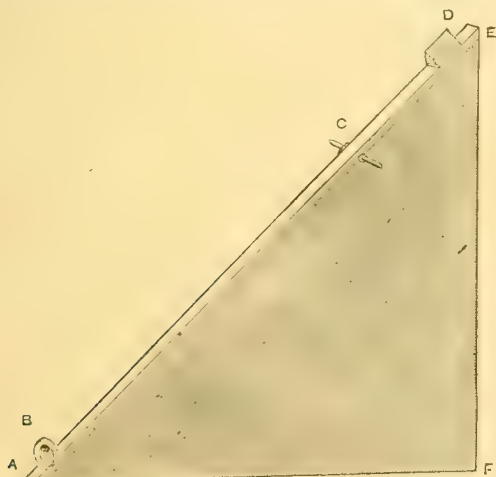
The area of kitchen garden, including the forcing houses, is a little over 3 acres, enclosed by a high wall. The general routine of cropping, it is needless to say, resembles that carried on in other gardens, the borders being devoted to early Cauliflowers, Peas, Beans, Potatoes, and a few other miscellaneous subjects. The Asparagus for very early use is lifted and forced in frames, but from January onwards, until it is procured from the open air beds, the forcing is carried on in permanent pits or beds. These are $4\frac{1}{2}$ feet wide, with 2 feet wide alleys 3 feet deep between them, and the sides of the beds are built up pigeon-hole fashion with brick, so as to provide a ready passage through the bed for the heat, which is generated in the fermenting material in the trenches. Whilst forcing is going on, wooden shutters or span-roofed wooden frames are used for covering the beds, and, in case of severe weather, additional protection is given, in the way of some litter strewn over the wooden covers. By this way of bringing the heat to the plants, and by forcing the beds in alternate seasons, the roots continue in vigorous health for many years. The fruit trees are almost all dwarf standards, which are much

preferred to the old fashioned large standards, because they bear well, afford great facilities for gathering their fruit, take up but little room, and permit vegetable crops to be grown amongst them to greater perfection than amongst the larger ones. The walls are well furnished with fruit trees, and by using frigi-domo screens in spring to protect the blossoms, a good crop is generally secured. Of the fruit houses there are several ranges, particularly of Vineries. Some are common lean-to's; others are curvilinear lean-to's, and the Grapes are so managed that the Black Hamburgs forced in pots are ripened early enough to come into use before the old Alicantes and Lady Downe's Grapes are altogether consumed, while between these two extremes Muscats and Hamburgs are had in great abundance, and of excellent quality. For the earliest forcing, however, pot Vines are not liked so well as permanent ones, as the latter are found to produce finer and heavier produce with the same amount of forcing, and much less attendance and care than pot Vines. Peaches, Nectarines, and Figs are also forced here in large quantities; the trees, being all planted in the borders, annually yield excellent crops. Melons and Cucumbers, too, are forced in pits and frames heated by hot water and fermenting manure; and of Strawberries, as well as other fruits, large quantities are forced, some in the early fruit houses, and others in pits specially devoted to them, and later in the season to Cucumbers or miscellaneous flower garden or conservatory plants. This year, one of the tropical forcing houses has been converted into a Banana house, in which the plants are in excellent condition. They are planted in a bed built in the middle of the house, and filled with rich turf and manure, water being abundantly supplied. The Vanilla is also growing in this house as freely as any stove climber, in a compost of sphagnum and rough peat. Other tropical fruits are also grown here, but not to the same extent as in times gone by.

THE ARBORETUM.

A SELF-ADJUSTING TREE-MEASURER.

It was announced in THE GARDEN some weeks ago that the Tyneside Naturalists' Field Club intend to record the heights and dimensions of the largest and most remarkable trees in



Tree measurer.

that part of the country, with photographs of the best. G. C. Atkinson, Esq., of Wylam Hall, near Newcastle, president of the Tree Committee, has taken this interesting matter in hand, and is now busy at his work, which is greatly expedited by the use of a simple little instrument invented by him, for measuring the heights of trees, &c., and of which, with his sanction, I am enabled to give your readers a description. He calls it a "self-adjusting octant." It is made of brass, and it will be seen, by the accompanying illustration, that it forms a right-angled triangle, two sides of which, A F and F E, are equal; the other side, A E, is furnished with "a sight" D,

exactly like that on the barrel of a rifle. A brass pin, C, is passed through the plate, at such a point that when the plate is balanced on this piece, between the finger and thumb (for which purpose the left hand with the knuckles down is found most convenient), the side A F shall be perfectly horizontal, the long edge then falls into an angle of 45° to the horizon, and the observer (allowing the octant to swing freely by the piece between his finger and thumb) looks along the long side, through the hole in the heel sight, advancing or retiring till the top spray of the tree is in line with the sight. The distance then from the place where he stands to the point vertically beneath the spray, plus the height of his eye from the ground, is exactly equal to the height of the spray from the ground, provided the ground is level; and on one side or another, level ground may generally be selected. J. T.

THE OAKS OF CALIFORNIA.

IN all parts of California various species of Oak form a marked feature in the scenery. Even on the warm plains, where other kinds of tree-life disappear, the evergreen Oak forms specimens and groups here and there that would grace an English park—which, after all, is where one looks for the finest trees. On the foothills, again, and at a few thousand feet high on the mountains, the fine evergreen vegetation seen beneath the huge Pines is, to a large extent, composed of handsome evergreen Oaks, one, in particular, having foliage somewhat like a Camellia, and with a tawny-orange hue on the underside of the leaves. Some of these fine Oaks are not as yet in cultivation in England, though they all deserve a place and a trial. The following are the better-known species:—

Quercus agrifolia, Californian Live Oak.—Oakland, banks of Sacramento river, Clear Lake, Russian River valley, Anderson's valley, Monterey. Foliage extremely variable, the Live Oak exhibiting almost every conceivable size and form of Oak leaf. On river banks and localities near the coast, where it feels the influence of the daily fogs, this tree displays much uniformity. In the valleys of the interior the shapes of the leaves of one and the same tree differ materially. In Anderson's valley there are several trees, the entire foliage of which agrees well with Dr. Kellogg's *Q. morehus*. On dry gravelly hill-sides in the interior this tree presents still another form, *Q. wislizeni*. As it has the habit of growing in groups, one might suppose that trees of one group, at least, should show uniformity in botanical characters; yet this does not happen, the very extremes sometimes occurring in a single group. The Acorns ripen annually, and differ also essentially in shape and size. Soil, climate, and exposition, offer in this case no satisfactory explanation for so great a variation in one species. It is no doubt justly referable to some intrinsic peculiarities. This tree makes excellent firewood, and is also used for certain mechanical purposes.

Q. Garryana, White Oak.—On dry easterly hill-sides and in valleys on a poor, buff-coloured clay. Santa Rosa valley, Clear Lake, Searsville, Anderson's valley, San José valley. Exposition and soil agree in all these localities; bark rather thin, whitish, and less coarsely rimose than any other of the California Oaks. This wood, possessing a fine grain, is much employed among farmers for making agricultural implements.

Q. fulvescens, Fulvous Oak, is a deciduous tree, grows about 30 feet high. The Acorn, when young, is concealed in the cup, the two together resembling a little wheel; the former, when mature, is 1½ inch long, and projects considerably beyond the cup. The wood is tougher than most of the Oaks of California. Banks of Canoe creek.

Q. Kelloggii, Kellogg's Oak.—Is a large deciduous tree, found only in California. Its leaves are deeply sinuate, with three principal lobes on each side, terminating in several acute points. It bears fruit only in alternate years, or at least most abundantly every other year. An idea prevails that the Acorns give to swine a disease of the kidneys. Hills about San Francisco and Fort Reading.

Q. vaccinifolia, the Huckleberry-leaved Oak, is a shrub from 4 to 6 feet high, which grows on the mountains in the northern part of the State. Its leaves in size and form resemble those of the Huckleberry; the Acorn is of the size and shape of a small Hazel nut.

Q. Hindsii, California White Oak, or Long Acorned Oak.—This is the characteristic Oak of California; seldom reaches a greater height than 60 feet, and in its expansive branches is often wider

than it is high—measuring sometimes 125 feet from side to side. This tree furnishes no straight timber, and the wood is so soft and brittle as to be of little use except for burning. The Acorns are large, sometimes 2½ inches long, and formerly constituted the chief article of food of the Californian Indians.

Q. lobata, Burr Oak.—The most common and largest Oak of California; found in all the valleys of the interior; never outside. It is a large and beautiful tree, this being the Oak, with its peculiar drooping branches, which imparts such a picturesque charm to the landscapes of California. It is specially noted for its long Acorns, usually occurring in pairs. This Oak presents about the longest trunk of all California foliaceous trees. The Acorn of this species is also a favourite article of food with the aboriginal races. The wood ranks next to that of the *Q. Douglasii*.

Q. Douglasii, Pale Oak, Anderson Valley.—The general aspect and habit of this tree resemble very much those of *Quercus lobata*, with which it grows in the low flat portion of Anderson Valley. Its branchlets, however, are short, rigid and erect, while those of the *Quercus lobata* are most drooping. In the autumn, when laden with fruit, it presents a striking difference by having its rather pale Acorns aggregated and clustered at the extremities of the branchlets. At a distance it strongly resembles a full-grown Apple tree. It increases rapidly in number in Anderson Valley, from south to north, outnumbering almost every other Oak at the lower end of the valley. Its wood ranks next to that of the *Q. Garryana*. The three above mentioned last species, belonging to the section of White Oaks, are sufficiently unlike in external appearance to be distinguished at a distance.

Q. Sonomensis, Black Oak.—Found at San Diego, Anderson Valley, Auburn, eastern and northern hill-sides in the Coast Ranges. It also occupies the more easterly situated flats, among the redwoods. Seldom found in the valleys; when occurring there they occupy that portion adjacent to the hill-sides, where there is generally a gravelly soil. In the fall it sheds its leaves, which become buff coloured, before any other of the deciduous Oaks. The wood is of a poor quality, being used only for fuel.

Q. densiflora, Chestnut Oak.—Along the Coast Range more abundant towards the north, from Santa Cruz to Mendocino City; occurs only in or near the redwoods. This tree attains a considerable height in dense woods, and is then but sparingly branched; leaves and Acorns rather abundant; the wood is coarse-grained, wet and spongy when first cut, and hence, like the Redwood, is by some termed Water Oak. The bark is very rich in tannin, and is extensively used for the curing of hides. The wood is extremely perishable.

Q. chrysolepis, Drooping Live Oak.—The most rare of all our Oaks; it bears Acorns but seldom and sparingly; found near Cloverdale, in Auburn Valley, and near Forest Hill; 30 to 40 feet high, with a rather smooth whitish bark, and mostly long, slender, drooping branches—evergreen. The tree being rare, and occupying moist slopes along the gulches, is not often cut down.

Lord Stair's Douglas Fir (*Abies Douglasii* Stairii).—At the Flower Show held the other day in the Botanic Gardens at Glasgow, was exhibited this variety of *Abies Douglasii*, sent by Mr. Fowler, gardener to the Earl of Stair, for which he received last year a first-class certificate from the Royal Horticultural Society. The Douglas Spruce is one of the finest and grandest of our Californian importations, and has already attained in this country a height of, more than 100 feet, with the prospect of 50 more being added in course of time. The Stair variety of this magnificent tree, of which Mr. Fowler forwarded some half-dozen specimens, is perfect silver, or rather white, instead of green, in spring; passes into a cream colour as summer advances; and in winter has progressed or relapsed into a very light green. A Spruce of more graceful form than our common Norwegian variety, and rising to a height of 150 feet, standing almost quite white among our sombre fir plantations, would be to say the least of it a very striking object. This is what Mr. Fowler's tree will be. It is as hardy and free-growing as the original stock, and after considerable cultivation shows not the slightest sign of reverting to the primitive colour. The new tree, in fact, appears to have turned up to take the place among our sombre evergreen woods which the purple Beech holds among our bright deciduous trees, and that it will soon be as common a feature of every attempt at landscape gardening is beyond doubt.

Poplar Wood.—Many despise Poplar as a timber, but it has one golden quality—it will not burn. Some years ago a factory at Nottingham took fire on the second floor and burnt out to the top furiously, but not downwards; although the floors lay a yard thick with hot cinders and melted machinery, yet it did not get downwards, because the floors were of Poplar.—A. Dawson.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Maintain neatness and order in the flower-beds by picking off decaying flowers, pegging down *Verbenas*, *Petunias*, *Heliotropes*, scented *Pelargoniums*, *Tropæolums*, straggling sorts of *Mesembryanthemums*, and similar habited plants used for edgings, affixing neat but hidden stakes to those requiring support, and maintaining vigorous health by a clean and open soil, and plenty of water. Propagate *Verbenas* in a cool frame or pit as soon as cuttings can be spared, and shade them well until they have struck root. Pinch off flowers from plants grown solely for the beauty of their leaves, and have a good reserve stock of annuals and other plants to fill up any accidental vacancies that may occur in the beds. Remove, if necessary, from conspicuous places *Daisies*, *Myosotis*, *Alyssums*, &c., and plant them in the reserve garden, where if now divided, and liberally watered, and otherwise well treated, they will make good plants by next spring. Pansies of the Imperial blue section, bedding *Violas*, *Saponaria*, *Marigolds*, and many other annuals, &c., may be effectively employed to replace them. Stake some of the strong-growing herbaceous plants, and cut off decaying blooms and seed-pods from *Pæonies*, *Poppies*, &c. Increase the stock of perennial *Iberises*, *Campanulas*, named sorts of *Antirrhinums* and *Pentstemons*, *Veronicas*, *Violas*, *Saxifrages*, *Wallflowers*, *Pinks*, and others, by means of cuttings inserted in a shady wall border. Of the *Aquilegia glandulosa*, and other early blooming plants, save the seed, which must be gathered as it ripens, and sown soon afterwards. The budding of *Roses* may now be proceeded with, and cuttings of the young wood may be inserted and struck like those of herbaceous plants. Remove suckers from the roots of *Rose* trees, thin and regulate gross and superfluous shoots, and look after and destroy grubs and aphids. Cut away dead branchlets from trees of the deciduous *Cypress* and other somewhat tender subjects; and out of the commoner shrubberies thin all decaying wood.

Kitchen Garden.—The moist warm weather which we are now experiencing has had a beneficial effect on the growth of crops of all kinds. Peas, in fact, are coming in too quickly, as are also Cauliflowers; new Potatoes are of a fair size; Cabbages, Spinach, and other green crops are excellent, tender, and crisp, and Strawberries, as a rule, are promising.

Asparagus.—Permit the plants to grow unchecked, and cease cutting from all plantations except such as are to be discarded. Keep the beds clean, sprinkle some salt on the surface, and give them good soakings of liquid manure. Look after the *Asparagus* beetle, for now its eggs, larvæ, and the beetle itself, may be found; shake them into a sieve or cloth and burn them, or pluck off the spray or entire shoots on which they are found, and similarly destroy them.

Basil.—Of the Common and Bush Basil transplant on a warm border in lines 9 inches by 6 inches apart any plants not yet put out. Give them plenty of water, and encourage their growth until they come into bloom, when the shoots should be cut over, dried, and powdered for winter use.

Beans.—Earth up advancing crops, and top them as they come into flower. For a late crop, sow Long Pod and Dutch Long Pod after steeping the seeds for a while in pure water to soften them, so that they may sooner germinate than they otherwise do, and giving them a dip in brine to prevent earth insects from interfering with them. If the crop of Long Pods now in bearing be cut over two or three inches above the ground, which should be well soaked with water some days previous to the operation, they will soon break again and send forth shoots that will yield an excellent late crop of Beans. Pick off all points of shoots affected with aphids, "blight," and burn them; caterpillars also require looking after, handpicking being the best way of getting rid of them.

Beet.—Encourage early sowings to grow as they must be used first, and thin out to 9 inches apart those sown in the end of April and in May. Deficiencies may be filled up by transplanting carefully lifted plants, for if their tap-roots are suddenly broken, the Beet is of little further use. Grubs sometimes attack the roots, for which the best remedy is handpicking.

Borage.—Sow a few seeds of this for succession in a dry soil in lines 8 or 9 inches apart, and thin out the plants to the same distance asunder in the rows.

Burnet.—Owing to the dampness of the weather, some seeds of Burnet may yet be sown. Thin out previous sowings to 3 inches between the plants.

Broccoli, Brussels Sprouts, Cabbage, &c.—Broccoli for late autumn and early winter use should be transplanted in good soil, but such as have to stand the winter are much harder if planted

in a firm loamy soil. Sow Walcheren and Sprouting for late spring use. Plant out Brussels Sprouts as ground can be spared for them, in rows 2 feet apart, and from 15 to 18 inches asunder in the row. A rich soil is apt to induce the production of succulent leaves rather than sprouts. Borecole or Kale generally succeeds the Potato crop, nevertheless this is perhaps the best vegetable we have for growing in a position with a northern aspect; the Dwarf Green Curled and its selected varieties are the best for ordinary purposes. The produce of the earliest spring-sown Cabbages is now turning in for use. Earth up the second crop, transplant the third or May sowing, and sow the main crop of the Fulham, Early York, and other allied dwarf sorts in the fourth week of this month in the warmer districts, and a fortnight earlier in the colder parts of the country. The thinnings of this sowing do well for Coleworts, but the Rosette and Cock's Hardy Green are the kinds most commonly used for that purpose. Earth up Cauliflowers, transplant the remainder of the April sowings, and what are fit for moving of the May one. This last sowing should include the Walcheren, which is not so liable to "button" from drought as the others; also Veitch's Perfection, which is one of the best for autumn purposes. Plant out the main crop of Savoys for late use on ground cleared of Potatoes, Lettuces, Onions, or other early crops. The early Ulm requires a distance of 15 inches each way between the plants; for larger sorts 2 feet will not be too much.

Carrots.—Thin out the main sowings according to the size which the roots are desired to attain; the farther apart they are the larger they generally grow. Sow some seeds of the Early Horn kind on a shady, yet warm border.

Celery.—The more hardily Celery is nursed the less liable it is to "run"; therefore have the latest plants pricked out on an open border until they are fit to transplant permanently. Plant out a main crop, and water abundantly the early planted one; after the plants have begun to grow vigorously, manure-water is of great advantage to them.

Chervil.—Sow the curled sort on a shady piece of ground.

Chicory.—Transplant the thinnings from last months' sowing; but be careful not to injure the tap-root in doing so. Sow a few more seeds rather thinly in rows from 15 to 18 inches apart, and thin out the young plants to 7 or 9 inches asunder in the rows.

Corn Salad.—Sow a few seeds of this broadcast, and lightly rake them in. When the young plants come up, remove the strongest now and then for consumption, which will be ample thinning.

Endive.—Sow for a succession in the middle and end of the month on a piece of finely-raked soil, and cover the seeds very lightly. Transplant some of the May sowings in rows about 15 inches apart, letting the plants stand a foot asunder in the rows.

Garlic.—Take up the bulbs when the leaves have decayed; strew them on the ground in the sun to dry, and afterwards store them in some dry place.

Hyssop.—Plants from seed as well as May-struck cuttings may now be permanently transplanted in a light dry soil, in rows a foot apart.

Kidney Beans.—Sow a few for a late crop, earth up the later sowings, and remove from amongst them, as soon as possible, Cabbages, Lettuces, and similar crops, among which Beans are commonly sown.

Kohl Rabi.—Thin this out a little if the plants have been sown where they are to remain; if not, transplant them into a piece of well-manured ground, in lines 15 inches apart and 9 inches asunder in the row, giving them water until they begin to make fresh roots.

Leeks.—Thin out the latest sowings to an inch or two apart, and still transplant from the March sowings if required.

Lettuces.—Sow for succession in a cool place, and plant out according to demand and available space.

Marjoram.—The flowers of Knotted and Pot Marjoram should be cut off, dried, and bundled for future use. Indeed, all herbs, such as Lavender, Sage, Thyme, &c., should also be treated in the same way.

Mustard and Cress.—Of these keep up a succession, by sowing thickly in rows on a cool moist border, and cover them with a mat until they germinate. By sowing the seeds in rows, the produce is more easily cut than when sown broadcast.

Onions.—Thin out the spring sowings to about 4 inches apart, and use the thinnings in the culinary department. Lift Potato-Onions, and dry them, and sow some Welsh Onion seed for early spring salading.

Parsley.—Remove flower-stalks from old plants, and maintain a good crop of young leaves by close and constant picking. In the middle or end of the month, sow some seeds in any corner available, and eventually transplant the young plants in lines 8 or 9 inches apart. These come in usefully in spring.

Peas.—The last sowing should be made at once, and it should consist of some of the early sorts. Earth up and stick advancing crops,

and see that the supply of water to the roots is abundant, for drought is a prolific source of mildew.

Spinach.—Sow for succession in a cool moist situation, pick the leaves as soon as they are ready, and clear away the plants when exhausted; for leaving them longer only robs the soil. If seed be desired, a row or two may be retained for that purpose. Pick the largest and most succulent leaves off the New Zealand Spinach, but do not injure the plants, as they continue in bearing for a long time.

Tomatoes.—Pinch off all laterals except three, and top the main shoots as soon as fruit has set; permitting a luxuriant crop of leaves and branchlets to remain on the plants is ruinous to the fruit crop.

Turnips.—Sow a main crop at once, and dust some lime and soot over the seedlings as they germinate, to prevent the attacks of the Turnip fly. Hoe and thin previous sowings.

Potatoes.—Clear out any still in frames, for much better produce can now be obtained from wall borders and dry banks. Earth up the latest crops.

Radishes.—Of these sow some for succession in cool moist ground, and in the last fortnight of this month sow some Spanish Radishes, in rows 8 or 9 inches apart, for late autumn and winter use.

Rampion.—If necessary, make another sowing of this on deeply worked soil, in lines 6 inches apart, and thin out those sown in May and June to 4 inches asunder in the row.

Salsafy, Scorzonera, and Skirret.—Thin these, and break off all flower-stems, or, if there is a plentiful supply of roots, pull up and discard all plants that "run."

Seakale.—Remove flower stems, unless seed-saving is an object, and pinch off all weak shoots from the crowns, retaining only two, three, or four of the strongest on each.

SOWINGS AND PLANTINGS FOR JULY.

Vegetables.

	<i>Crops fit for use.</i>
Orach	August and September.
Carrots	September and October.
Chervil	August to November.
Mushrooms (indoors)	September and October.
Endive	October and November.
Chicory	Winter and Spring.
Cabbage and Coleworts	November to May.
Broccoli	Spring.
Welsh Onions	Early Spring.
Spinach	August and September.
Tarragon (planted)	Spring and Summer.
French Beans	September and October.
Lettuce	do. do.
Corn-salad	do. do.
Mustard and Cress	2 or 3 weeks after sowing.
Turnips	October to Spring.
Sorrel	October to May.
Parsley	Winter and Spring.
Leeks (transplanted)	December to March.
Peas	October to November.
Radishes (of sorts)	August to December.
Rampion	February to May.
Pot Herbs (cuttings)	Next year.

Flower Garden.

Herbaceous plants in variety	For transplanting in Autumn and Spring.
Alpine plants	
Foxgloves	

Bulbs which may be Transplanted.

	<i>Time of flowering.</i>
Amaryllis Belladonna	September.
" lutea	September and October.
Colchicums	do. do.
Crown Imperials	April and May.
Cyclamens, hardy	September and October.
Erythronium Dens Canis	April and May.
Fritillaria Meleagris	March and April.
Muscari	April to June.
Lencojum vernum	February and March.
Snowdrops	January and February.
Crocuses	February and March.
Scillas in variety	January to May.
Various other bulbs.	

Seeds to Sow Indoors.

Cinerarias	Spring.
Calceolarias	do.

Shrubberies.

Evergreen trees and shrubs are transplanted during this month with unfailing success by some of our best Landscape Gardeners and Planters.

The seeds of the following trees and shrubs may be sown or stratified (that is, stored in vessels which are filled with alternate layers of seeds and sand):—Birch, Daphne, Cherry, Willows, and any fruit-stones that already have been gathered this season.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

Roses.—The Queen of Flowers was shown on this occasion in great beauty, and the weather—so changeable of late—was all that could be desired. The quality of the flowers staged in the different classes for cut blooms was, upon the whole, extremely good, though some few of the finest flowers showed signs of having been injured by the heavy storms which we had in the beginning of the week. Among the most prominent exhibitors were Messrs. Paul and Sons, who had beautiful cut flowers, and also excellent pot plants. Messrs. Veitch & Sons also staged some nicely-grown plants; as did also Mr. Turner. Mr. Cranston had likewise some fine blooms, and the fresh green foliage which accompanied them added materially to their effectiveness. Mr. Cooling, of Bath, also staged some nice blooms; as did also Mr. Fraser, Mr. J. Keynes and Mr. Turner. Of Tea-scented kinds Mr. B. Cant exhibited a fine collection. In the amateurs' classes Mr. Laxton, of Stamford, ably represented the Rose growers of the midland counties, his flowers being well formed, and of good substance and colour. Mr. W. Inglis, gardener to Mrs. Round, Buck Hall, Colchester, and Mr. G. Arkwright, Fenecombe Rectory, Bromyard, likewise staged fine blooms. Beautiful flowers were also set up by Mr. Baker, of Heavitree, and Mr. J. R. Hollingworth, of Maidstone, and Mr. J. Franter, of Upper Assenden, had fine blooms in class 8. Upon the whole the exhibition was a decided success. In class 1, for seventy-two distinct blooms, Messrs. Paul and Son were first, with excellent flowers, among which the following kinds were remarkable for fine quality—viz., light varieties: La France, a fine pale Rose; Princess Beatrice, a fine full flower, of a pale flesh colour, with a rosy centre; Madame Rivers, an old and well-tried favourite; Marguerite de St. Amand, a fine large flower; Madame Vidot, another good old Rose in the way of Madame Rivers; Abel Grand, a fine kind, having a vigorous habit, and bearing finely-formed silvery-pink flowers; and Souvenir d'un Ami, one of the finest of all Tea Roses when well-grown. Among dark varieties were Beauty of Waltham, a fine cupped flower, of a decided cherry-crimson colour, and of very free habit; Antoine Ducher, Senateur Favre, Marie Rady, Annie Wood, and Marie Baumann, the last two both fine Roses, rich crimson-carmine, finely formed, and of good substance; S. R. Hole, deep velvety crimson; Ferdinand de Lesseps, Duc de Rohan, and Dr. Andry. Mr. Cranston was second with a very fine stand, which, in addition to some of the varieties mentioned above, contained good flowers of Margaret Dombrain, rosy-lilac; Reine Blanche, pearly-white; the centre suffused with the palest flesh colour; Madame E. Verdier, pale flesh, with deep rose or salmon centre; Caroline de Sansal, an old and well-tried light rose; and Lælia, a very large-flowered kind, of a clear satin-rose colour. The dark flowers in this collection were Duke of Edinburgh, deep velvety crimson; Xavier Olibo, John Hopper, a well-known Rose of first-class merit; Chas. Lefebvre, Alfred Colomb, Nardy Frères, a fine and distinct flower, colour rose, shaded with lilac or pale lavender; and Mons. Paul Neron, a large flower, of a soft rosy-violet colour. Mr. B. Cant was third with some fine flowers, among which we noticed Comtesse de Paris, Duc de Wellington, Exposition de Brie, Horace Vernet, a fine crimson flower; and Camille Bernardin, a beautiful bright red flower, shading into white round the edges. Messrs. Mitchell and Son, of the Down Nurseries, Uckfield, were fourth with nice blooms, including Reine des Beautés, a fine closely-imbriated flower, in the way of Madame Rivers; Madame Hector Jaquin, fine, clear rosy-lilac, having well-rounded petals of good substance; and Adam, a fine rosy flower with salmon centre, one of the best tea-scented kinds. In Class 2, for forty-eight Roses, three trusses each, Mr. Cranston took the first prize with a stand well furnished with fine flowers, and the freshest foliage we have noticed for some time. In this collection Felix Genero, a fine globular purple lilac flower was shown in good condition; Madame Charles Wood of a glowing rose colour; and Duchess de Caylus a well-formed flower of a glowing crimson. Three very fine flowers of La France, one of the best light Roses, were also in this collection. Messrs. Paul and Sons were second, and Mr. Turner third, with fine flowers of Climbing Devonensis, Marquis de Gibot, Elie Morel, and old Alba Roses. Mr. Keynes was fourth with General Jacqueminot, fine crimson; Madame Hippolyte a sulphur-coloured Tea Rose; Mons. Noman, one of the finest of light flowers; and Souvenir d'Elise, and America, both fine tea-scented kind.

In the other Classes, Messrs. Paul, Cooling, Fraser, Cant, Keynes, and Turner were the principal exhibitors, while the amateurs were well represented by Messrs. Porter, Inglis, Baker, Lode, Earley, Skinner, Hollingworth, Franter, Bennet, and Cavill.

Fruit.—This was in all cases excellent, and, with few exceptions, it was shown in the following classes in competition for the prizes offered by Messrs. Veitch and Sons, of Chelsea. For a collection of ten dishes of different kinds there was only one exhibitor, Mr. G. Sage, of Ashridge Park, to whom an extra prize was awarded. His collection consisted of Muscat of Alexandria and Black Hamburg Grapes, Florence Cherries, Royal George Peaches, Elruge Nectarines, Brown Turkey Figs, a nice little Melon, a huge cluster of the fruit of Musa Cavendishii, a Queen Pine, and a dish of Sir C. Napier Strawberries. In the class of a dish of White Grapes, Mr. J. Douglas, Loxford Hall, was first with excellent bunches of Muscat of Alexandria; Mr. Cole, Ealing Park, was second with Bowood Muscat; and Mr. J. Woodbridge third with Muscat of Alexandrias. For a dish of Black Grapes, of any sort, Mr. J. Wakefield, Leamington, was first, with beautiful bunches of Black Hamburg, and some fine samples of Black Prince were also shown in this class. Pines, which were very good, consisted entirely of Queens. Mr.

C. Rye, Walvedon Park, Tonbridge, Kent, was first; Mr. J. Ward, Bishop's Stortford, second; and Mr. T. Miles, Wycombe Abbey, third. Peaches were very fine; indeed, those Violet Hatives staged by Mr. J. Jackson, Tixall Hall, who received the first prize, were uncommonly fine, being large, ripe, and well coloured. The other sorts were Royal George, Early Grosse, Mignonne, and Noblesse, Mr. Miles being second, and Mr. J. Burnet, Deepdene, Dorking, Surrey, third. The Nectarines held as high a position as the Peaches, Violet Hative, Pitmaston Orange, and Elruge being the kinds exhibited; and Mr. Wallis, Kirby Hall, York; Mr. Jackson, Mr. Jack, Battle Abbey; and Mr. G. B. Tillyard, Brocklesby Park, Lincoln, were the successful contributors.

Prizes were offered by Messrs. Carter & Co., Holborn, for six dishes of Peas, to include G. F. Wilson and James's Prolific Marrow. In this class Mr. W. Cross, Peak Lodge, Sidmouth, Devon, was first with excellent examples of Superlative, James's Prolific, G. F. Wilson, William the First, Popular, and Omega. Mr. Brown, Hawley Court, Henley-on-Thames, was second; Mr. W. Moorman, Kingston-on-Thames, third; and Mr. G. Bagnell, Sherborne Castle, Dorset, fourth.

CRYSTAL PALACE GREAT ROSE SHOW.

JUNE 28TH.

Of this a full account will be found in another column; we shall, therefore, here only allude to the table-decorations and Fern cases. One of the best furnished tables was that shown by Mr. Buster, St. Mary's Cray. It consisted of five March stands placed along the centre; the largest being in the middle, the second sized two at the extreme ends, and between these and the middle were set the smallest ones. These stands were furnished with Grasses (rather too abundantly), Spiræas, Ferns, Kalmias, Penstemon gentianoides, &c. Finger-glasses, containing pretty little bouquets, were also supplied. The decorations of the other tables were of a somewhat similar character, but differed in the number and shape of the principal stands and finger-glasses. The flowers and leaves used in the different exhibitions did not vary much. In most of the decorations there was abundance of Roses. The chief exhibitors were Mr. and Mrs. Hudson, Champion Hill, Camberwell; Mr. and Mrs. Burley, Brentwood; Miss Blair, 50, Upper Bedford Place, Russell Square; Mr. Soder, Homewater, Brentwood; Mr. Wilkinson, Dadbroke House, Brentwood; and Mr. Chard, Clarendon Park, Salisbury. Some nice Fern cases, filled with suitable plants, were exhibited. To Messrs. Dick Radclyffe & Co., High Holborn, was awarded a first prize for a pretty little rustic case, suitable for a drawing-room or hall. Mr. Jones, Oakwood Lodge, Epsom, was second; and Mr. Garford, Camberwell, third. Messrs. Downie, Laird, & Laing, of Forest Hill, furnished a large and varied collection of stove and greenhouse plants, Ferns, and Pelargoniums, as did also Mr. J. Ley, of Croydon. Mr. R. Parker, Tooting, contributed a marvellously fine collection of cut blooms of herbaceous Peonies, and Mr. C. Turner, of Slough, exhibited some nice blooms of Carnations and Picotees.

NEW PLANTS SHOWN AT BATH.

THE number of these was rather limited, and, with few exceptions, they were confined to competing classes. For six new plants, exclusive of Orchids, Mr. Wm. Bull, Chelsea, was first, with a very fine half dozen, including *Dracæna imperialis*, *D. Goldiana*—one of the most curiously variegated of the genus; *Pritchardia grandis*, a handsome bright green-leaved Palm; *Croton majesticum*, a fine well-coloured and vigorous species; *C. spirale*, a very ornamental form of *Croton*, and *Campsidium filicifolium*, one of the prettiest dwarf plants we possess for a trellis. Messrs. Veitch & Sons, Chelsea, were second, with *Dipladenia insignis*, a brilliant species of which we have elsewhere given an illustration, the handsome and graceful *Aralia elegantissima*; *Adiantum speciosum*, a pretty strong-growing kind; *Dracæna amabilis*; *Tillandsia Zahnii*, a showy Bromeliad, with leaves flamed with bright red, and a yellow flower spike; and a pretty kind of *Yucca*. In Mr. Williams's collection, to which a third prize was awarded, were a pretty little Maiden-hair Fern of the *Cuneatum* section, but having finer pinnae than we have ever observed in any member of the family; the showy *Anthurium crystallinum*; *Maranta Makoyana*, and the pretty *Aralia Veitchii*. Messrs. Carter and Co., High Holborn, showed a good specimen of *Campylobotris Ghiesbreghtii variegata*, a singular plant with reddish-brown leaves, as if variegated with creamy-white. The same firm also exhibited an example of *Anæctochilus Orgiesii*, a pretty little plant having undulated leaves of a deep green colour, well variegated with silvery-green. For the best new Orchid in flower, Messrs. Veitch were first with a plant of *Masdevallia Harryana*, bearing nearly a dozen brilliantly coloured flowers. Mr. B. S. Williams and Mr. Bull were likewise successful contributors in this class with *Odontoglossum Insleyi leopardinum*, a pretty Orchid, and apparently a free flowering one; four or five flowers, of a yellowish-brown colour, barred and spotted with dark brown, being produced on each spike. Messrs. Backhouse, of York, exhibited a specimen of *Oncidium tigrinum*, also a promising species. Plants specially sent out by Mr. Bull were shown for prizes offered by that gentleman, but both exhibitors and plants were the same as at Kensington on the 7th ult. In the amateurs' class, Mr. Shuttleworth was first, Mr. Croucher second, and Mr. Carmichael third; and in the nurserymen's collection Mr. Wimet was first, Messrs. Downie, Laird, & Laing second, and Messrs. Carter & Co. third.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

STRAWBERRY CULTURE AT BATH.

THE climate of this part of Somerset is very favourable for the production of early crops, and the much undulated ground is well drained naturally. The prevailing soil is a sandy loam on a stratum of sandstone-rock, and, notwithstanding the steepness of the hillsides, they present a good depth of surface soil. These conditions, it will be seen, are very favourable for the growth of Strawberries, a crop for which the neighbourhood of Bath has long been celebrated. As a rule, there is nothing different in the system of culture pursued there from that generally practised in other places. The earliest crops, which chiefly consist of Black Prince, are grown on high-lying borders at the foot of walls covered with fruit trees. The main crops are commonly grown on sloping banks or in fields, where they ripen well, but in very dry seasons suffer considerably from drought. It is from the valleys between the hills that the finest produce is obtained, where the ground is deep, rich, and open, and can be easily watered. The only drawback of the valleys is their liability to damp and spring frosts. About Bath Sir C. Napier is looked upon as being the best of all Strawberries for market use; it is early, a good cropper, and has very large and brilliantly coloured fruit, which, from its solidity and firmness of flesh travels better than softer-fleshed kinds. Carolina superba, too, is regarded as a fine sort, very prolific, and a certain cropper, but the size of the calyx greatly deteriorates its value in the market in the estimation of some; nevertheless the quality of the fruit is excellent, the size good, and the colour a bright red. Myatt's Eliza is another favourite kind, greatly esteemed for its flavour. It is very prolific, and has medium-sized well-coloured fruit that is highly appreciated by private customers, the public in general preferring larger and more showy fruit. Kitley's Goliath is extensively grown by some cultivators, while by others it is entirely discarded. It is a very strong-growing sort, but an uncertain cropper; when it does bear well, however, the crop is enormous, and the fruit, which is very large when well ripened, is excellent, and meets with a ready market. Duc de Malakoff is regarded as an excellent Strawberry, valuable for its free bearing qualities, and good-sized, brightly-coloured, and well-flavoured fruits. British Queen is used extensively, but for cropping and general market purposes it is surpassed by some of the others. Lord Clyde is a great favourite as a late sort, bearing, as it does, very large fruit somewhat of the character of Eleanor; but, unlike that variety, its trusses are more erect, the fruit is therefore less liable to be damaged by worms than that of Eleanor. Elton Pine is also grown extensively for late crops, being very prolific and a certain cropper. These constitute the chief kinds grown in this district both for market and private purposes.

The ground is prepared for the crops by trenching and thoroughly pulverising the soil, adding at the same time a goodly quantity of manure. After having remained laid up in ridges throughout the winter, it is levelled, lined off 2 feet apart, and the plants are inserted 18 inches or 2 feet asunder in the row, according to the character of the sort. Throughout the succeeding summer no particular care is bestowed on them beyond keeping the ground well hoed and clean, and in August the runners are cut from the parent plants and removed. In winter, if manure is plentiful, a mulching is introduced between the rows, where it is allowed to remain, for the alleys between the rows are never dug nor forked, but simply hoed. In spring nothing is done to them beyond keeping them thoroughly clean, the decayed manure from the winter's mulching being left loose on the surface. Just before the plants come into bloom they are mulched with moderately rough manure; and, if practicable, the ground is well watered with house sewage. When the fruit ripens, it is necessary to protect it from birds, and for that purpose cats are employed. Wires about a foot from the ground are stretched at variable

distances across the plantations, and to each of these wires a cat is tethered by means of a string about 4 feet long, having a ring at the end of it to run along the wires. A little cask or box being provided as a retiring place for each cat, the whole arrangement is complete, and is found to answer perfectly. After the crop has been gathered, and such runners secured as are required for new plantations or for sale, the remaining runners and most of the old leaves are cut away from the plants; and under this treatment, plantations of Strawberries are kept in a good bearing state for years.

WILLIAM FALCONER.

ROSE GROWING AT BATH.

BATH is pre-eminently a Rose-growing place; there almost every cottage and suburban villa is adorned with the Queen of flowers, and pleasant it is to behold the Tea-scented kinds growing there as freely as Ivy or Honeysuckle, and pushing up their fragrant blooms in profusion. Not only are the walls of the houses thus decorated, but the gardens around them abound with standards and dwarfs both of Tea-scented and hybrid perpetual Roses, as well as with our old-fashioned free-blooming kinds. For market purposes Roses, likewise, form a valuable commodity, and growers of them for sale in that way provide themselves with plenty of propagating pits and stock plants. For Tea-scented varieties, the cultivated seedling Briar is the favourite stock, and for that class of Roses it is superior to the Manetti. The Manetti, however, answers best for hybrid perpetuals. When the plants are grafted in winter and spring they are plunged in bottom heat, in close and shaded frames, in a warm house or pit, and as soon as they have taken fairly, and have begun to grow, they are repotted, and replaced in the same frames as before until root action is again fairly at work, when they are placed on the side shelves of the houses or pits to make room for others. They are afterwards shifted as required, pinched when the shoots have a tendency to become too long, and gradually inured to a cool temperature. During this period they are kept moderately moist with tepid water, gently syringed over head every fine day, and kept in as light houses as possible. Tobacco-water is used to keep down green fly, and flowers of sulphur as a preventive of mildew. By the first of June these young plants should be tolerably good-sized specimens and should be thoroughly hardened off, so as to be ready for planting out. Beds are prepared for them in deeply-worked soil, liberally enriched with old manure and leaf-soil, and having an eastern or south-eastern aspect if possible. Here they are planted in rows at variable distances, and over their roots is placed a mulching of Cocoa-nut fibre, leaf-soil, or decayed manure. In planting, it is an important point to bury the point of union of stock and scion in the soil, so as to encourage the emission of rootlets from the scion, thus giving the plants support. Such as are required for retaining in pots are re-potted into a compost of two parts rotten manure, one part leaf-soil, and three parts good loam, and plunged out of doors in beds, and treated like the permanently planted ones. The pot plants, as winter approaches, are brought indoors to be forced, if necessary, and to supply scions for grafting. The permanent bushes remain untouched, with their mulching still around their roots, until the pruning season comes round in spring. The ground is then cleared of all prunings, and hoed, and otherwise made properly clean; but at no time are the alleys between the Roses dug or even what is called pointed. A fresh mulching consisting of two loads of decayed manure mixed with one load of leaf soil is then laid on thickly, and this keeps the roots moist and near the surface. The result of this treatment, as might be expected, is a large supply of excellent Roses. Before the buds begin to expand a small piece of bast matting is tied—not firmly—around each to preserve their symmetry and prevent their expansion. As, during the height of the Rose season blooms are cut daily, or at least three times a week, the quality of the buds is not thus impaired, and they are preferred to expanded blooms for hand bouquets and button-hole flowers. If picked early in the morning, when the dew is on them, they travel better and keep fresher than if gathered throughout the day when they are dry.

NOTES OF THE WEEK.

— SOME of the finest and most delicious British Queen Strawberry we have ever tasted are being sold now in Covent Garden. They were grown on the sewage farm at Barking.

— THE salesmen in Covent Garden Market report that the Potato disease has again made its appearance.

— IN the large collection of Lilies grown by Messrs. Barr and Sugden the following are now finely in bloom, viz., *Lilium* (Brownii) japonicum; several varieties of *Croceum*, *Davuricum*, and *Thunbergianum*, and many others equally interesting and beautiful.

— ONE or two of the fine specimens of *Yucca aloefolia*, in the succulent house at Kew, are now in flower. The great panicle of drooping waxy balls at the summit of the plant house has a fine appearance. The flowers are white in colour and lightly suffused with purple outside the segments.

— ON Monday next Mr. Stevens will sell for Messrs. Backhouse, upwards of 40 plants of the rare and beautiful *Oncidium tigrinum*, all showing flower and in the finest possible condition. Also four plants of a yellow-stemmed Bamboo beautifully striped with green, lately introduced from China by Mr. Fortune. This, it is said, will make a good conservatory plant.

— THE last thing in the way of exhibitions is a Universal Exposition of Horticulture. The matter was brought before the Italian Parliament by Deputy Perruzzi on the sitting of the 10th ult. but postponed as being inopportune. Professor Parlatore has however formed a committee at Florence for the furtherance of the idea, which, it is not unlikely, may be adopted at some future time.

— ACCORDING to the *Pays* the Court of Accounts is about to sue M. Thiers to recover a sum of some £6,000 (150,000 francs) for vegetables. The *Pays* asserts that during his tenure of the Presidential chair M. Thiers' table was supplied with vegetables and fruit from the Versailles hothouses, and the Court of Accounts will have it that the State cannot be legally called upon to defray the expenditure of the President's State dinners.

— M. LINDEN has announced his intention of giving up his extensive nursery at Brussels, and, for the future, concentrating his business in his old establishment at Ghent. In consequence of this decision, M. Linden will offer for sale by auction, in the beginning of next September, the whole of his valuable Brussels collections, which comprise over 100,000 plants. A detailed catalogue will be issued about the beginning of August, which will be sent to intending purchasers, on applying to M. Linden, 52, Rue du Chaume, Brussels.

— THE Highland and Agricultural Society of Scotland have taken a praiseworthy step in memorialising Government to do what is undoubtedly their duty to the country—appoint a commission of competent scientific men to inquire into the causes of the ever-recurring Potato-disease, a disease which is a national calamity. How far advanced the American Government is in matters concerning the national welfare is well shown by the memorialists, and even Portugal is far enough ahead of us to appoint a Government Commission to enquire into the Vine disease.—*Nature*.

— AMONG the most conspicuous plants in flower on the rock-work at Kew just now are *Orchis foliosa*, of which there is a fine plant beautifully in flower; several nice plants of the showy North American *Cypripedium spectabile*, *Houstonia cerulea*; *Triteleia laxa* and *Murphyana*, two good hardy bulbs; a nice plant of *Linum viscosum*, the flowers of which are larger than those of any plant of this species with which we have yet met; and *Dianthus saxicola*, a very distinct but somewhat straggling-growing species, which bears a profusion of fine rose-coloured flowers. In the herbaceous grounds, one of the most interesting plants now in flower is *Abronia arenaria*, a yellow-blossomed species, introduced a few years ago, we believe, by Mr. Thompson, of Ipswich. This plant is showing an abundance of bloom, and promises to become a valuable hardy plant, particularly for rock-work; its trailing habit making it a subject eminently adapted for that kind of decoration.

— AN evening fête was held in the Royal Botanic Society's Garden, Regent's Park, on Wednesday last. The gardens were illuminated with electric lights, which lit them up with almost noon-day brilliancy; but the conservatory was lit up by means of gas as were also the two large tents, while the covered way connecting the tents and leading to the gates was hung with numbers of little oil lamps, which produced a very pleasing effect. The soft, even sultry, night air permitted the utmost liberty in the matter of evening dress, and the gardens were as gay as a ball-room, without its closeness of atmosphere or its circumscription of space. There was one very objectionable thing which we trust the society will abandon on future evening fêtes. We allude to the odour of the substances used to produce the various coloured lights, which at intervals lit up the

place, and the stench of which was intensely disagreeable and overpowering. In our opinion these lights did not add to the charms of the garden, being too glaring, even if they were not the cause of changing, for a time, the sweet air of the garden for a vapour, far worse than that which prevails in the most disagreeable parts of the underground railway.

— A plant of *Gunnera seabra* at Brest is reported to be now bearing a fruit of more than 5 feet in circumference.

— A FLORA of Cheshire is shortly to appear under the superintendence of the Hon. J. L. Warren.

— THE whole of the fine collection of Yuccas, Agaves, Aloes, and various other families of succulent plants formed by Mr. W. Wilson Saunders, at Reigate, will shortly be sold at auction by Mr. Stevens.

— LORD SHAFTESBURY and his daughter, Lady Victoria Ashley, were present last Wednesday evening at an interesting gathering of Watercress and flower-sellers. Some 600 of this neglected class were served with a meat tea at the Agricultural Hall, after which they were addressed in words of good advice by their kind-hearted patrons. In the course of the evening a silver card-case, and a handsome basket filled with choice flowers, were presented to the noble lord and to Lady Victoria Ashley—the result of a penny subscription spontaneously organised among the Watercress and flower-sellers.

— FROM an official report, dated March 15th of this year, we learn that from the years 1862 to 1871 the inhabitants of the Mauritius have been obliged to import firewood and timber for various uses to the value of £192,115. The report (which is drawn up by Mr. J. Horne, sub-director of the Mauritius Royal Botanical Gardens) calls loudly upon the Government to take resolute action in the question of the re-wooding of the waste lands of the colony, and states that, under the present state of things, in less than twenty years hence there will be no timber growing in the island fit for the builder's use.

— IN connection with New Caledonia (the Australasian island to which so many of the condemned French Communists have been lately "deported"), M. Balansa relates two striking cases of the accidental naturalisation of plants. In the first instance, about four years ago, a gendarme, who was transferred to this island from Otaheite, brought with him a bolster filled with the feathery seeds of *Asclepias curassavica*. Having occasion to wash the tick-cover, he opened the bolster at the Pont des Français, when some of the seeds were carried off by the wind, and the plant has, since then, increased to such an extent as to seriously interfere with cultivation, its roots running under ground to considerable distances, and sending up shoots in all directions, so that it is difficult to eradicate it. In the second case, M. Balansa relates that, a few years ago, some boxes arrived from Sydney containing various articles packed in European hay. This was thrown out and left on the ground where the boxes were unpacked. In the following year a new graminaceous plant was observed growing plentifully where the hay-packing had been left. This proved to be common Couch Grass (*Triticum repens*), and it has spread so rapidly that M. Balansa states it is already exterminating the native Grasses.

— SOME time ago we alluded to experiments that had been made in France as to the practicability of creating artificial clouds which would protect the Vines from frost. These experiments were conducted in the neighbourhood of Suresnes, and M. Constans de Saint-Sauveur, a well-known viticulturist in the south of France, now relates the result of other experiments which he has himself tried in the department of the Tarn. Writing to M. Drouyn de Lhuys, he says:—"We have long been in the habit of making fires with green wood and damp straw to protect our Vines during the spring frosts; but this method rarely proved efficacious, as the changes of temperature occurred too suddenly. This went on for some time, until one evening, when the weather was fine but rather chilly, we noticed a thick cloud suspended over the Tarn which prevented us from seeing its waters. This cloud was produced by the smoke that issued from a caldron of coal-tar which a farmer was using to bedaub some palings. The idea struck me that this would be an excellent substitute for straw and wood; and, having now had it in use for five years, I can state most confidently that the remedy is easy of application and far from costly. We place small caldrons of coal-tar, each holding from ten to fifteen litres, at intervals of about 50 yards from each other and about 200 yards away from the Vines in the direction of the wind. As soon as the Grass shows traces of frost, we set the caldrons on fire, and do not extinguish them until about an hour after sunrise, for the tissues of the young plants which can resist the dilation produced by the freezing of the water, are often destroyed afterwards by the action of the sun's rays upon the white hoar frost with which they are covered. If the wind changes, we, of course, place the caldrons in a correspondingly different position."

THE FLOWER GARDEN.

CALADIUM ESCULENTUM.

For adding a semi-tropical character to the flower garden through the summer and early autumn months, few exotic plants are better adapted than this *Caladium*. In warm sheltered localities it makes a free and rapid growth, especially when planted in prepared soil of a light and sandy character, well enriched with rotten manure. For large clumps or masses it is well adapted, as a strong tuber planted in a warm nook soon establishes itself, and forms a good specimen. This species is no more difficult to manage than a common *Canna*, while its bold foliage is unique and strikingly effective, especially in the vicinity of water. It is extremely easy to propagate by dividing large tubers, and it may be kept through the winter in any shed or cellar, where frost is not admitted. Being a gross feeder and of rapid growth, it follows that an abundant supply of water at the root must be given when growing, while, when the roots are removed indoors in autumn, they may be preserved through the winter in moist sand or earth.

The Spring Phlox (P. Verna).—Many of our readers may remember this little spring flower as an old acquaintance, though perhaps they may not know where to find it now. With the large flowers and richness of colour of the taller Phloxes, it used to mantle over the old border and the rockwork with a healthy soft green about an inch or two high, and then send up numbers of stems from 4 to 6 inches at the end of April or beginning of May, each producing from five to eight deep rose flowers, and it was such a pretty, easily-grown thing on the rockwork, or a border, that no wonder it was a favourite with the old gardener. It is by no means fastidious as to soil or situation, but will be found to thrive best in peat or light rich soils. As it creeps along the ground and gives off numbers of little rootlets from the joints, it is propagated with the greatest ease and facility. A person with the slightest experience in propagation would be able to take a tuft of it, and convert it into a thousand plants, in a very short time. It is almost indispensable for rock or rootwork; makes very pretty edgings and tufts around the margins of beds of plants, &c.; and also capital turfs on the front edge of the mixed border. It is also useful in spring bedding, and free tufts of it might be employed for vases, or for the edges of raised beds. Everybody who cares about hardy spring flowers should grow it for some of these purposes.

Hardy Exotic Ferns.—Can any one recommend some exotic Ferns sufficiently hardy for an open-air Fernery?—R. E. H. [Messrs. Backhouse, of York, who have from time to time tried numbers of their rich collection in the open air, have found the following succeed. Some of them are well known to cultivators, others are seldom seen, but are deserving of much more extended culture:—*Adiantum pedatum*, *Asplenium alternans*, **A. elegantulum*, **A. ebenum*, *A. fontanum* Halleri, *Botrychium virginicum*, *Cheilanthes vestita*, **Lastrea atrata*, **L. erythrosora*, *L. Goldiana*, *L. novaeboracensis*, **L. opaca*, **L. Standishii*, *L. Barnesii*, *Lomaria alpina*, *L. magellanica*, *L. chilensis*, **Notholaena Marantæ*, *Osmunda cinnamomea*, *O. gracilis*, *O. interrupta*, *O. spectabilis*, *Onoclea*

sensibilis, *Polypodium hexagonopterum*, *Polystichum acrostichoides*, *P. acros. incisum*, **P. vestitum venustum*, *Struthiopteris germanica*, *S. pennsylvanica*, *S. japonica*, *Woodsia obtusa*, *Woodwardia orientalis*, **Cyrtomium caryotideum*, **C. falcatum*, *Pellaea atropurpurea*, *Cystopteris bulbifera*, *C. tenuis*, and the Club Moss, *Selaginella denticulata*. The kinds marked * would require to be judiciously planted in well-drained and sheltered spots on rockwork, &c., or otherwise protected with a little Cocoa-nut fibre, fronds of the common Fern, &c., to ensure their resisting unusually severe winters.]

The Tuberous Nasturtion (*Tropæolum tuberosum*).—What is wanted with this plant is to starve it, and to roast it; treated thus, I have seen it presenting a beautiful appearance, and I would strongly recommend a trial of the plan to those who have plants by them established in pots. What I mean by starving them is to plant them in a thin layer of poor gravelly soil, resting on a hard and almost impervious (and of course dry) bottom. What I mean by roasting them is to choose a situation for them where they may

be fully exposed to the burning heat of a summer's sun, unsheltered and unshaded; no place can be better than one in front of a wall having a south-west aspect. If those who have hitherto neglected *Tropæolum tuberosum* will treat it something after this manner, they will be much pleased with it.—T. M.

New Herbaceous Plants.

—The most noticeable among the hardy herbaceous subjects shown at Bath were *Funkia Fortunei*, with large white flowers, and leaves blotched with gold, shown by Mr. Williams, of Holloway; and *Cyclobothra pulchella*, a profuse bearer of golden-yellow flowers, and a *Calochortus* with a large yellow flower, blotched and stained with brown at the base of the petals, shown by Messrs. Backhouse, together with the curious *Lewisia rediviva*, with its large, purplish-rose, Portulaca-like flowers. The *Calochortus* is a splendid thing. Mr. Ware showed *Triteleia laxa*, in fine bloom, under the name of *Leucocoryne alliacea* (which, of course, was wrong). It is a fine thing, with large blue, Brodiaea-like flowers. He also showed a very showy and desirable orange-scarlet variety of *Papaver alpinum* under the name of *Papaver miniatum*, and a fine pot of *Teucrium pyrenaicum*, in excellent bloom. Messrs. Bell

and Thorpe showed the curious, old-fashioned *Salvia Horminum*, seldom seen in gardens, but quite worthy of a place in all. Its crest of purple leaves at the summit of each shoot renders it a desirable curiosity.—H. HARPER CREWE, *The Rectory, Drayton-Beauchamp, Tring*.

Plants for Islands.—On a piece of water here there are two or three islands on which Oaks, and Beeches, and Rhododendrons grow luxuriantly, the soil being mossy and peaty. I should be glad to hear of some plants I could trust to grow in such a place without looking after them. The class of plants I should prefer would be tall and strong-growing kinds, with fine foliage.—CALVICEPS, *Knitsford*. [The Giant Cow Parsnips (*Heracleums*), Pampas Grass, *Arundo Donax*, *Arundinaria falcata*, *Tritomas*, *Bupththalmum speciosum*, *Crambe cordifolia*, French Artichoke, *Gunnera scabra*, *Helianthus* (large perennial kinds), *Hemerocallis fulva*, *Lavatera* (tall perennial kinds), *Onopordons*, *Phytolacca decandra*, *Polygonum cuspidatum*, *Rheum*, *Rumex Hydrolapathum* (for the water side), *Vernonia novaeboracensis*, several of the tall Michaelmas Daisies, *Echinops exaltatus*, *Lythrum salicaria*, *Irises*, *Myosotis palustris*, and *Solidago grandiflora*.]



Caladium esculentum.

THE GARDEN GUIDE.

SUFFOLK.

WOOLVERSTONE PARK.

THIS is one of the finest places in the county. The park is well wooded, chiefly with Oaks, beautifully undulated, and fully stocked with deer. It is bounded on one side by the Orwell, which, when at high water, is one of the finest rivers in England. A new approach of great beauty, recently formed by Mr. Nesfield, commands fine views of the park and river. The house, which is a substantial white brick building, commands fine views of Broke Hall, Orwell Park, and Nacton on the opposite shore. For many years the mansion stood alone in the park, unsupported by shrubs or flowers; at last Mr. Nesfield built a massive retaining wall between the park and the grounds, and laid down one of his prettiest gardens on a level very much lower than that of the house, thus affording scope for the introduction of terraces, flights of steps, and, indeed, all the elements of the geometrical and architectural style. Towards the mansion, the terraces, &c., are flanked by masses of shrubs and choice trees. The garden is remarkably well kept and furnished, and looks well all the year round. It is crowned, beside the mansion, by a noble span-roofed conservatory, containing some magnificent Camellias in fixed vases on the floor. These are models of form, health, and beauty. One plant of *Elegans* had 400 blossoms on it this spring—a noble sight worth travelling many miles to see. The side stage in front is well filled, and the roof and panelled back wall are clothed with the choicest climbers and hanging baskets. Among climbers, the *Lapageria rosea* is the "lion" of the house, covering an amount of space, and flowering with a profusion that I have never seen equalled. The conservatory is attached to the mansion at one end, and terminates with a substantial and well-clothed Fernery at the other. The main passage here is on a curved line, and leads out to the garden through masses of stones, fine Ferns, and falling waters. The gardener's cottage stands in the park, just outside the kitchen-garden, a model of beauty and convenience. The kitchen garden is large and productive. A grass walk, with a herbaceous border on each side, is carried right through the centre of it. There are a great many houses for fruit and plants; numbers of pits, frames, &c. Peaches and Grapes are remarkably well-grown, Mr. Sheppard taking most of the local prizes for Grapes, Ferns, and stove plants, especially *Bougainvillea glabra*. On the cliff, near the Orwell, there is a very extensive wild garden and Fernery. The position is admirable, and streams of water trickle and leap along, in different directions. Here, in addition to the commoner varieties, several of the Bamboos and exotic Ferns, such as the *Dicksonia antarctica*, *Woodwardia radicans*, and some of the *Cyatheas* have proved almost hardy. To the true lover of nature, the Fernery on the cliff is perhaps the richest treat at Woolverstone. But the whole place is rich in natural and artificial beauty, and the latter has neither marred nor superseded the former. The cliff scenery, for instance, is most natural, the art chiefly revealing itself by clothing it with a superior vegetation, and adding depth and intensity to its inequality of surface.—John Berners, Esq., gardener, Mr. James Sheppard. Four miles south by east of Ipswich.

WHERSTEAD PARK.

THIS is much nearer to Ipswich than Woolverstone. It stands upon an eminence, commanding a fine view of the estuary of the Orwell. The carriage drive is pretty, and some fine Pinuses (among the best of which are a *Arancaria* and a *Sequoia Sempervirens*) adorn its side. The garden around the house is small, consisting of a geometrical flower garden, shrubberies (in which masses of *Rhododendrons* abound), and a block of glass houses, in which good fruits and plants are cultivated. On the opposite side of the public road a very large kitchen garden is enclosed with red brick walls, well furnished with fruit trees.—Lady William Graham; gardener, Mr. Thomas Jarman. 2½ miles from Ipswich.

STOKE PARK.

THIS is a pretty mansion, situated in a well wooded park, commanding a fine view of the river Orwell. It is also surrounded by a pretty garden.—Lord Gwyder; gardener, Mr. Creswell. 1½ miles from Ipswich.

THE CHAUNTRY.

No one passing along the public road from Bramford to Ipswich, can have failed to notice some of the most magnificent entrance gates to be seen in this country. They are massive, elaborate, and literally laden with gold. One could but think they were the fit portals to a ducal residence. On entering the gates, however, great disappointment is experienced on finding one's self immediately in

front of a showy Italian mansion, adorned with a profusion of balustrades, cornices, vases, &c. The house, though a fine mansion, commanding extensive views of Ipswich and the charming valley of the Gipping, and surrounded by nice grounds, by no means bears out the lofty ideas suggested by the magnificent lodge gates. Pretty gardens, nice lawns, and terrace walks surround the house.—Sir Fitzroy Kelly resided here for many years; gardener, Mr. Peter Boreham. Distance from Ipswich 2½ miles west by north.

ORWELL PARK.

THIS park, so called from its being bounded by the Orwell throughout its entire length, is one of the richest and best wooded in the kingdom. It abounds in clumps and single trees, and is well stocked with deer. The present proprietor has greatly improved the house and grounds, having lowered the entire lawn and a large portion of the park to bring the river into view from the lower windows of the mansion. He has also formed a large lake for waterfowl near the Orwell. The house is surrounded by a fine lawn, flower-gardens, and terrace walks, commanding rich views of the Orwell and the park and woods of Woolverstone on the opposite shore. On the lawn are some noble trees; among others, one of the finest evergreen Oaks in the country; at 4 feet from the ground it measures 12 feet round the stem, the spread of its branches reaching to 65 feet—a magnificent specimen. There are also some fine Cedars on the lawn; one, near the Orangery, is 19 feet round, with 60 feet spread of branches; another is 20 feet round, and with 60 feet spread of branches; each of the measurements of the trunk being 4 feet from the ground. About twenty years ago, a great many Conifers were planted here. The following are the measurements of a few of them:—*Cedrus Deodara*, 4 feet 9 inches in girth of stem, and 30 feet through the branches; *Pinus excelsa*, 9 feet girth of stem, and 30 feet spread of branches. Here, too, are many specimens of *Pinus insignis*, *Abies Douglasii*, *Wellingtonias*, &c., almost equally large. Two common Poplars in Nacton village, close by, measure 15 feet and 14 feet 8 inches round the bole at 4 feet from the ground. The kitchen garden, a very fine one, with numerous plant and fruit houses, is well furnished with fruits and vegetables. The chief features of Orwell, however, are its fine trees, far reaching lawn, nice flower gardens, and large park.—George Tomline, Esq.; gardener, Mr. Wallis. Four miles south-east of Ipswich.

BROKE HALL.

The entrance lodge to this pretty park and garden is just at the extremity of the gardens of Orwell Park. The two parks, in fact, join, and are separated merely by a road leading down to the beach. Broke Hall is approached by an avenue of Sycamore, that at one time ran past the front door of Orwell Park House. The hall is prettily embosomed in trees and shrubberies and forms a beautiful object from the river. The gardens are not very extensive, but very pretty, and the cliff has recently been added to them by the planting of choice trees and shrubs, and the formation of some nice walks through the belt of wood. These command charming views of the Orwell, to which they are, in fact, very near. Coniferous trees do well here, and many thriving plants are getting up about the pleasure grounds. Some *Picea Cephalonica*, planted twenty-four years ago, have a girth of 4 feet, at the same distance from the ground. The branches have a spread of 24 feet, and the trees average 40 feet in height. *Wellingtonias*, 4 inches high in 1858 are now 37 feet high, 15 feet through the branches, with a girth of bole of 7 feet. An old Pollard Oak in the park is 20 feet in girth at 5 feet from the ground. The park is pretty, and well furnished with timber. The kitchen garden is well sheltered, and its soil is of excellent quality. A very fine plant of the deciduous Cypress is just outside the wall. Several of the walls are only 4 inches in thickness, and are built in a series of reverse curves to give them strength. The trees do remarkably well in these curves. The soil is a rather strong loam, and some of the finest Peaches have been grown in this garden. The gardens have also been long famed for the excellency of their Grapes, which have carried off a great many prizes.—Mr. Jenkins; gardener, Mr. D. Daniels. 4½ miles from Ipswich.

Children and Flowers.—Take a child along a country lane, and gather sprays of any of the plants as you walk, and you may teach that child lessons in brief sentences that will never be forgotten—the Crab, parent of every Apple; the Briar, nurse of better Roses; Ivy, that adorns and shelters its supporter; Coltsfoot, Ground Ivy, and many more—the poor man's medicines; Grass, the most refreshing garb of the world. Gather any flower, and point to the pistils and stamens—parents of all seeds; petals that adorn, and calyx that sheltered them all in their infancy. Such lessons add an interest to every ramble.

THE INDOOR GARDEN.

ALPINIA VITTATA.

THIS pretty variegated plant is a native of the South Sea Islands, from which it was introduced to our collections by Mr. Wm. Bull, of Chelsea. Its distichous lanceolate leaves vary from 6 to 8 inches in length, and are strikingly marked with pale green or creamy-yellow stripes on a dark green ground. It is a perennial, and grows freely under ordinary stove treatment, making, when thoroughly established, a very effective decorative plant. Each plant presents a charming variety in the colouring of its individual leaves, the yellow stripes preponderating in some cases, and the light green in others. It is easily propagated by dividing its underground rhizomes, and should be added to all collections where variegated-foliage plants are a desideratum. Even when grown in small pots it is an effective plant for stove decoration.

AZALEAS.

I HAD once to deal with some neglected Azaleas that were sadly in want of re-potting. I reduced their balls by shaving all the outside roots off with a sharp knife, and, when sufficiently reduced, re-potted them in much smaller sized pots than those in which they had been growing. In re-potting, the balls were filled round firmly with a compost, consisting of three parts peat, one of loam, and plenty of silver sand; watering abundantly, and placing them in a late Vinery. By the end of the season they had made a good growth, were well set with buds, and a fresh lot of young shoots had taken possession of the new soil. This shift served the plants for three or four years, when they were again taken out of their pots, subjected again to the carving knife, and treated generally as before. The result has always been healthy plants and plenty of flower. So much for the treatment of old plants. Young Azaleas that are to be grown on as specimens for conservatory decoration must be treated in a liberal manner. Supposing we have a young plant that has just come from the

nursery to operate upon, the first thing to do is to examine its roots. If these are in a healthy state and not pot-bound, the plant will not require a shift for another year; but should the roots be getting matted at the sides of the ball, the sooner it is transferred the better. For a small plant a 1-inch shift—that is, a pot 2 inches wider than the one the plant is growing in—is sufficient at one time. The pot should be well washed and carefully drained with an inch of clean crocks. The plant must then be turned carefully out of the pot, the old crocks removed, and the sides of the ball pricked gently with the

point of a label, so as to liberate the roots. The soil should consist of peat two-thirds, loam one-third, and a good proportion of silver sand. A little of this compost should be put in the bottom of the pot before putting the plant in, just sufficiently to raise the surface of the ball to within half an inch of the rim, to allow room for watering. Then, taking particular care that the plant is evenly placed in the centre, fill up round the sides, ramming the soil pretty firmly at the same time with the broad end of a label. After potting, water thoroughly two or three times till the water runs out at the bottom of the pot, and set the plants in some structure, such as a Peach-house or Vinery, where they can have light and a genial temperature. Water regularly and carefully, syringe frequently to keep down insects, and



Alpinia Vittata.

fumigate when necessary. With this treatment the plants will make a nice growth by autumn, and be furnished with plump flower-buds. Before this can be distinguished, however, the plants should be accustomed to a more airy temperature and when the buds are fully developed they should be removed to a cool house, from which they may be removed as required, and forced into flower in a gentle heat. Those who wish to make pyramids of these plants ought to begin by tying the lowest branches down to the rim of the pot, first putting a straight stake in the centre of the plant, and then tying the second tier of shoots to the bottom ones, and so on to the top of the plant.

S. W.

GARDEN DESTROYERS.

INSECTS INJURIOUS TO ROSES.

ABOUT this time of the year the Rose grower frequently finds the leaves of his Roses shrivelling up and withering. On examining them, he discovers a small dark green caterpillar-like larva feeding on them, usually on the upper surface of the leaf. This is the larva of the yellow Rose-leaf sawfly (*Tenthredo (Athalia) rosæ*), a small four-winged, thick-bodied, yellow fly, with the head and back of the thorax of a jet black colour. The parent deposits her eggs on the mid-rib of the leaf, and the larvæ, when hatched, commence to devour the leaf in a manner which distinguishes them from all other insects which prey upon the Rose. They do not consume the entire substance of the leaf, but confine themselves to the parenchyma or cellular tissue of the upper surface, which they completely eat away, leaving the nerves and the epidermis of the under surface untouched, and transparent as gauze. The ravages of this pest extend through the months of May, June, and July, the larvæ appearing in the greatest numbers in the last two months. A second brood is produced in September and October. The only means of getting rid of them is careful hand-picking. It may be as well to remark here that the larvæ of the sawflies, although very similar in appearance, differ from true caterpillars (the larvæ of moths and butterflies) in the following respects—namely, that they always have more than 16 feet (from 18 to 22), a rounded head, and two eyes. The true caterpillars, on the contrary, never have more than 16 feet and seldom fewer than 10, and their heads are heart-shaped, or slightly triangular, with six eyes.

THE WHITE-BANDED SAWFLY (*TENTHREDO CINCTA*).

The Rose also frequently suffers from the attacks of the larva of another sawfly (*Tenthredo (Emphytus) cincta*). This insect is entirely black, with rust-coloured legs, and a white band across the abdomen. The female lays her eggs on the ends of the young herbaceous shoots, and the larva, when hatched, eats its way into the interior of the shoot until it reaches the pith, on which it continues to subsist until it



Larva of *Tenthredo cincta*.

passes into the pupa state. As it works its way downwards from the point to the base of the shoot, each leaf dies in succession, as the larva reaches the part of the pith opposite to it, until the entire branch becomes completely debilitated; several larvæ being sometimes found at intervals, one above another, in the same shoot. The only remedy is to cut off the shoots sufficiently far down, as soon as the buds and leaves begin to show symptoms of fading, and then to burn them.

THE COMMON ROSE SAWFLY (*TENTHREDO ROSARUM*).

The larva of another sawfly (*Tenthredo (Hylotoma) rosarum*) attacks the leaves of the Rose in a different manner, eating them quite through, as the Cabbage caterpillar devours the leaves of the Cabbage. The parent insect is a small four-winged fly, with a brownish yellow body, and head and thorax of a brownish black, and in early summer may be seen, mostly in the morning and evening, hovering around Rose trees. The female deposits her eggs, to the number of from eight to fifteen on one shoot, each in a separate notch which she cuts in the bark. In depositing the egg, she also



Tenthredo rosarum and larva.

emits an acrid liquid, which hinders the lips of the cut from growing together again over the egg, and produces a dark-coloured swelling of the bark. The larvæ are hatched in about eight or ten days, and commence to feed ravenously on the leaves nearest to them. They are of a dark yellow colour on the back, green, or greenish-yellow, on the sides, and whitish underneath. They grow very rapidly, attaining their full development in about four weeks, when they descend from the branches and bury themselves deeply in the earth, where they pass into the chrysalis state. From this they emerge in the ensuing August, and produce a new generation of larvæ which infest the Rose trees until October. These undergo the same metamorphoses, but pass the entire winter underground, coming out as perfect insects late in spring. Almost all kinds of Roses are subject to be attacked by them, but the Banksian, the Tea, and Bengal Roses appear to suffer much less than any other kinds. Careful hand-picking is the best safeguard from these foes. In the month of May, the parent fly, being heavy with eggs, is easily caught, as it rests on a Rose branch, and should be killed, as a preventive measure.

THE APHIS, OR GREEN FLY.

All through the summer, Rose trees are liable, more or less, to be attacked by the aphis or green fly, which sometimes covers the leaves in such numbers that their destruction speedily follows. It has been computed that each female produces, on an average, fifty young ones daily, so that in three generations one family will number 125 millions of individuals. As they suck the juices of the leaves and tender shoots incessantly, it is not surprising that these quickly wither. Many remedies have been recommended for these pests, such as tobacco-water, a solution of sulphate of copper, alcohol, paraffin oil, &c.; the following, however, is the simplest, least offensive, and most efficacious:—Take 4 ozs. of quassia chips and boil them for ten minutes in a

gallon of soft water. Strain off the chips, and add 4 ozs. of soft soap, which should be dissolved in it as it cools, stirring it before using. To apply it, take a moderate-sized painter's brush, dip it in the mixture, and brush every leaf and shoot upwards with it. About ten minutes afterwards syringe the tree with pure water, in order to wash off the dead insects. This is a perfect cure for the green-fly.

THE DOUBLE-HORNED SAWFLY (*TENTHREDO DIFFORMIS*).

Tenthredo (*Cladius*) *difformis* is a small black sawfly with white legs. It derives its name of *difformis* from the fact that



Larvæ of *Tenthredo difformis*.

the antennæ of the male insect are pectinate, while those of the female are nearly filiform. The larvæ make their appearance on Rose leaves in May, a second brood appearing in September. They are of a delicate green colour, like that of the leaves, and have red heads. Along their sides is a row of small prominences, each bearing a little tuft of greyish hairs. There are seldom more than three or four of these larvæ found under the same leaf. The remedy is to cut and burn the leaves on



Tenthredo zona.

which they are found, and also to destroy the parent insect whenever she is met with previous to depositing her eggs.

THE YELLOW-BANDED SAWFLY (*TENTHREDO ZONA*).

Tenthredo zona. This species of sawfly appears to be not so widely distributed as most of the other kinds, and is not met

with in some localities. It is a small black fly, about one-third of an inch long, with yellow legs, and marked on the abdomen with bright yellow rings. The larvæ make their appearance in May and again in September. They are of a greyish-green colour with red heads, and the entire surface of the body is covered with small white tubercles. When employed in eating they extend themselves in a straight line, but when reposing they roll themselves into a spiral form. When arrived at their full growth, they drop to the ground, in which they bury themselves, and form a cocoon of clay tempered with saliva. In about six weeks the perfect insect emerges, but the pupæ of the second brood pass the winter underground. Remedy the same as in the last case.

THE ROSE SCALE.

A species of white Scale (*Chermes rosæ*) sometimes occurs in such quantities on the shoots of Roses that they appear to be covered with a white crust. They do not adhere very tena-



The Rose Scale.—1. Scale of the natural size, showing the upper and under surfaces. 2. The larva magnified. 3. Rose-branches encrusted with the Scale.

ciously to the bark, and are easily removed by brushing the shoots with a stiff brush. The best time to do this is before the buds appear.

THE ROSE-LEAF MINER (*TINEA RUFICAPITELLA*).

In autumn, the leaves of Rose trees are very often marked in various directions with broad brown lines, having a narrow black one running down the middle. This curious appearance is caused by the caterpillar of a very small moth (*Microsetia* (*Tinea*) *ruficapitella*) which feeds on the inside of the leaf. When full grown, this caterpillar is not more than one-sixth of an inch long, of a yellow-orange colour, with a brown mark down the back. The brown marks on the leaves are caused by the drying up of the epidermis, in consequence of the caterpillar having eaten a channel through the parenchyma or substance of the leaf; the accompanying black marks are formed by the excrement, which, while the caterpillar is young, entirely stops up the channel which it mines through the leaf.

When full grown, about the end of October, it eats its way out of the leaf and crawls down the branches and stem, until it finds a convenient place to fix its cocoon. The remedy is to cut off and burn the leaves as soon as they appear to suffer.

THE ROSE-LEAF ROLLER (*TORTRIX BERGMANNIANA*).

Early in May a very destructive pest makes its appearance on Rose leaves. This is the caterpillar of a small moth, named *Tortrix Bergmanniana*. It is easily detected from its habit of fastening the edges of the leaves together with glutinous threads, so as to form a shelter for itself, while it gnaws away the tender leaf or bud on which it may have fixed itself. It is most injurious to the young Rose-buds, sometimes eating a large piece out of three or four buds in succession, and disappointing the grower's hopes of a show of bloom. As soon as it has arrived at its full growth, it envelopes itself with a silky covering, which it spins inside of the rolled-up leaf on which it has last fed, and there it passes into the chrysalis state, from which it emerges as a perfect insect in the end of June, or early in July. At that time the moth may be seen, after sunset, flitting about Rose trees in every garden in Europe. It is rather more than half an inch across the wings, the upper ones of which are yellow, finely reticulated with reddish-brown, and marked transversely with three silvery and black streaks of a metallic lustre; the lower wings are blackish. The female deposits her eggs in a scattered fashion, usually at the base of a branch. They are not hatched until the following spring, but occasionally, in warm summers, a second brood appears in September. No time should be lost in destroying the larvæ as soon as the first rolled leaves are seen. This is



Tortrix Bergmanniana and larva.

readily done by squeezing the leaves between the finger and thumb, which effectually disposes of the marauder within. The flower-buds, if any, should also be examined at the same time.

THE ROSE WEEVIL (*OTIORHYNCHUS SULCATUS*).

The Rose-weevil (*Otiorynchus sulcatus*) is a beetle-like insect, larger than a lady-bird, and of a dark brown or nearly black colour. It commits its depredations by night, when it eats out the centres of the buds, frequently doing extensive damage in this way. In the daytime it hides in crevices or in the ground. It is, consequently, difficult to find, and the best plan is to visit any trees which appear to suffer from it by night with a lantern, when the delinquent may be caught in the act and receive immediate and condign punishment.

THE ROSE CICADELLE.

The Rose is occasionally attacked by a small grasshopper-like insect, known as *Typhlocyba rosæ*, or the Rose Cicadelle. In its early stages it is enveloped in a mass of white frothy substance, popularly known as "Cuckoo's spittle," which will be found covering the greater part of the underside of a leaf or the extremity of a tender shoot. In this condition the insect lives on the juices of the leaf or shoot, which, by their marbled appearance, soon show signs of suffering, as the insect pierces them all over as

it sucks. The perfect insect is narrow, a sixth of an inch long; with the wings, when closed, sloping down at the side; very pale yellow, with pale orange dashes; and jumps, grasshopper-like, most vigorously when approached. In this state, it does not appear to be injurious to vegetation. The larvæ may be easily destroyed by cutting off the leaves or shoots which bear the frothy masses, and throwing them into a vessel of hot water.

THE PSI MOTH.

The Caterpillar of another moth (*Noctua Psi*), figured below, is also sometimes very injurious to Rose trees. It is



The Psi Moth.—1. The perfect insect. 2. The Caterpillar.

very common in the autumn, both on fruit trees and Roses, eight or ten of the Caterpillars being frequently found on one shoot. The colour of the body of the Caterpillar is blackish, with a broad lemon-yellow, sulphur-yellow, or whitish band along each side, extending to a little in front of the base of the curious conical projection on the back behind the head. The body is also thickly covered with fine dark-coloured hair which grows in pencils or tufts from the numerous tubercles on the sides and back. The dark colour of this Caterpillar renders it very conspicuous, so that plants infested by it can be easily cleared by hand-picking.

SPIDERS.

In dry soils, certain kinds of Roses (especially Moss and Provence) are liable to be attacked by an orange-coloured fungus (*Uredo rosæ* and *Puccinia rosæ*) on the under surface of the leaves; on leaves so attacked are often found two species of small spider, one green (*Acarus rosarum*), and the other red (*Acarus Pucciniae*). These are probably not injurious to the plants, as they are only found along with the fungus, on which they appear to subsist. They may, however, easily be removed by syringing with water in which a little soft soap has been dissolved. For the fungus alluded to no remedy has been discovered, those which are effectual in other cases having proved perfectly useless in this. As a preventive of the fungus, Mr. Rivers recommends that the Roses should be lifted and replanted every autumn, giving them at the same time plenty of manure and stirring the soil three feet deep.

BEDEGUAR.

The accompanying illustration represents the Bedeguar of the Rose, and the various stages of the insect which produces it. It is a mossy excrescence, which, by the month of September, is as large as a medlar, covered with filaments like those of a Moss Rose. As the season advances, it assumes a reddish or pinkish hue, mingled with yellow and green. It is produced by a small gall-fly, named *Cynips rosæ* (fig. 6), which is shining black,

with the base of the abdomen and the legs reddish. The insect lays about a dozen eggs together at the extremity of a shoot or branch. They are not laid on the surface, but the insect either cuts a slit in which the eggs are placed, or, perhaps, rather punctures the epidermis, and deposits the eggs beneath it. The irritation of the tissues, produced by the larvæ which

chose one, and commenced to cut out oval pieces from it about the size of a sixpence. This they did in the most expeditious manner, as if they had a pair of miniature scissors in their mouths. They then took the pieces in their legs, and flew away." The "bees" here spoken of use the bits of leaf as nest-building material, and, unfortunately, there is no remedy against them, short of stationing a lad beside each Rose-bush to keep them off as he would rooks from corn.

THE VAPOURER MOTH.

The Caterpillar of the Vapourer Moth (*Bombyx (Orgyia) antiqua*) figured below, is very commonly found on Rose trees, although it is not peculiar to them, but occurs on various kinds of fruit trees also. It varies in colour, being sometimes of a very pale bluish grey, sometimes blackish, and sometimes whitish, with tufts of greyish hairs growing from the tubercles with which it is covered. The first segment has on each side a long bundle of unequal hairs, each terminated by a little knob which, when united, look like horns. This caterpillar is a voracious feeder, and two or three of them will soon make sad havoc among the leaves of a Rose bush. Boisduval relates that, in 1836, they were so numerous that they stripped off all the leaves from the Limes in the garden of the Palais Royal at Paris. They were in such large numbers that they were seen crawling over the ground on all sides, and, having exhausted their supply of provisions, most of them appear to have perished from hunger, as in the following year very few made



Bedeguar of the Rose.—1. The Bedeguar. 2. Do. cut through, showing the cells. 3. Larva of Cynips. 4. Head and first joints of the body of the larva. 5. Pupa. 6. Perfect Insect.

are hatched from these eggs, causes an excess of woody fibre to be deposited around them. This increases in size, and, as the larvæ grow, the irritation, doubtless, increases, and the exterior throws out the mossy filaments which characterise the Bedeguar. These are not mere threads, but flat processes, with branches striking off on each side. If the excrescence is cut across, it will be seen to consist of numerous cells in a hard woody substance, as shown in fig. 2, and in each cell is a single small larva (fig. 3); or, if it is farther advanced, a pupa (fig. 5) like a half-developed fly. Fig. 4 represents the head and first joints of the larva. The Bedeguar cannot, perhaps, be called very destructive. It, no doubt, must prove a drain upon the strength of the plant, and, so far, must be regarded as injurious. It is chiefly the Wild Rose or Briar that is attacked by it, but it is also found on various other varieties of the Rose. The remedy is to cut off the excrescences and burn them, and, as they are conspicuous and easily detected, it is not difficult to get rid of them.

THE LEAF-CUTTER.

Even after the most careful hand-picking, and when caterpillars and other larvæ appear to be quite exterminated, the leaves of Roses will often be found seriously cut and injured, apparently by some insect. These ravages are the work of the "Rose-cutter" or "leaf-cutter" (*Megachile Willughbiella*), a bee-like insect, whose mode of operation has been well described as follows, by one of our correspondents:—"I was standing opposite a large Rose-bush the other day, and noticed that the foliage appeared almost entirely destroyed, apparently by some worm or caterpillar. I called the attention of a friend (in whose garden the tree was) to the fact, and his reply was, 'Yes, it is a great nuisance, but it is not done by caterpillars, but by bees!' Never having heard of such a thing before, I expressed my incredulity, when he replied, 'Let us stand perfectly still for a minute, and we shall soon see our little friends at work.' In a few seconds three or four bees settled upon the Rose-bush, and, after passing from leaf to leaf, as if picking one to suit their purpose, they finally



Caterpillar of the Vapourer Moth, with the winged male perfect insect, and the wingless female.

their appearance. When they occur in a rosary the speediest remedy is hand-picking, and, as the Caterpillar is tolerably large and conspicuous, this is a ready and effectual way of getting rid of them.

THE GOLDEN-EYES.

Our article would be incomplete, did we neglect to notice one insect which affects the Rose, and which, being a true gardener's friend, might through ignorance, unfortunately suffer in an indiscriminate *chasse* of insect pests. This is the "Golden-eyes" (*Hemerobius (Chrysopa) perla*), a lace-winged fly (figured below), with an apple-green body, transparent wings of the finest texture, and most gloriously brilliant golden eyes. It is usually seen flying in the evening only, unless when it happens to be disturbed. The female deposits her eggs in a very singu-

lar manner. Standing near the edge of a leaf, or on a tender shoot, she applies the extremity of her body to the leaf or shoot, and gradually raises it, emitting at the same time a thin hair-like thread of liquid glue, about half an inch in length, at the top of which she simultaneously deposits an egg. She repeats this process until from eight to a dozen eggs are laid, together forming a kind of bouquet (*vide* 2 in fig.). It is to be remembered that the "Golden-eyes" only lays her eggs on Rose leaves, or branches infested with aphides or "green fly." When the larvæ are hatched, they crawl deliberately down the thread-like supports of their cradles, and arriving at the leaves, fall to work at once in devouring the aphides. Being armed with powerful mandibles, and blessed with unflagging appetite, their destructive powers are complete, and the "green fly" speedily vanishes beneath their incessant attacks. From the peculiar manner in which the eggs of the "Golden-eyes" are disposed, they are easily distinguished from those of all other insects, and the Rosarian, if wise, will, for the reasons we have given, be careful to spare them. With respect to the



The "Golden-eyes."—1. Perfect insect. 2. The eggs.

beautiful parent insect, we regret to have to state that it affords an instance of the truth of the proverb, "*Tout beau n'est pas toujours en tous sens bon*," for, despite its magnificent golden eyes and delicate wings of gauze, it does not improve on near acquaintance, its custom being to salute those who handle it with a stench worthy of the rankest bug.

The illustrations in the foregoing article are taken from the work of M. Boisduval, the eminent French entomologist.

W. M.

Poisoning by Water Dropwort (*Enanthe crocata*).—Dr. Charles A. Cameron, Professor of Hygiene, Royal College of Surgeons, Ireland, and Analyst to the city of Dublin, has sent to the *Lancet* the following case of cattle poisoning. A herd of seventy-four oxen were at the end of last April turned into the demesne of Lord Dunraven, Adare, County of Limerick. In a few days the animals began to sicken, and in about a week forty-three died. Mr. Keyes, V.S., who saw some of them, stated that in most of the cases death took place very soon after the illness was observed. The animals foamed at the mouth, had distended nostrils, shivered at the loins and hind extremities, the respiration was rapid and laborious, and they had tetanic spasms, the neck being curved laterally. Some of the animals reeled in a circle for several minutes, and then fell and died instantaneously. As it was suspected that the animals had been poisoned, the stomachs of some of them was sent to Dr. Cameron for examination. He could not detect any of the ordinary poisons, but in the herbage found in the first stomach he observed numerous fragments of a plant which he suspected was the Water Dropwort (*Enanthe crocata*). Dr. Cameron sent for some of the herbage of the demesne, and this was found to include a large proportion of the Water Dropwort, one of the most virulent of British poisonous plants. There are on record a few cases of poisoning of man and some of the lower animals by Water Dropwort. The symptoms noticed by Dr. Keyes are similar to those observed by M. Bellamy, and described by him in the *Recueil de Médecine Vétérinaire* for 1856.

THE GARDEN IN THE HOUSE.

PLANTS IN SLEEPING-ROOMS.

On this subject Professor Kedzie, of the Michigan Agricultural College, writes, in a letter to Governor Holt, as follows: "Not to leave this matter in the condition of mere conjecture, I have gathered and analysed specimens of air from a room where the influence of growing plants would be exhibited in a greatly exaggerated form. Thus, instead of taking the air from a room containing a few plants, I gathered it from the College greenhouse, where more than 6,000 plants are growing. I gathered the air before sunrise on the mornings of April 16 and 17. The room had been closed for more than twelve hours; and, if the plants exhaled carbonic acid to an injurious extent, the analysis of air from such a room would certainly disclose this fact. The three specimens of air gathered on the morning of April 16, from different parts of the room, gave 4.11, 4.00 parts of carbonic acid in 10,000 of air, or an average of 4.03 in 10,000. The two specimens of air gathered April 17 gave 3.80 and 3.80 parts of carbonic acid in 10,000, or an average on the whole of 3.94 parts of carbonic acid in 10,000 of air; while the outdoor air contains 4 parts in 10,000. It will thus be seen that the air in the greenhouse was better than "pure country air." This deficiency of carbonic acid was doubtless due to the absorption of carbonic acid and consequent accumulation of oxygen during daylight, since the windows of the greenhouse were closed day and night on account of the cool weather. To ascertain whether the air of the greenhouse had more carbonic acid by night than by day, I gathered two specimens of air in different parts of the house, at two o'clock p.m., April 17. These gave 1.40 and 1.38 parts of carbonic acid in 10,000, or an average of 1.39 parts, showing that the night air contained more carbonic acid than did the air of day. Now, if a room in which were more than 6,000 plants, while containing more carbonic acid by night than by day, contains less carbonic acid than any sleeping-room on this continent, we may safely conclude that one or two dozen plants in a room will not exhale enough carbonic acid by night to injure the sleepers."

Balcony Decorations.—There are many herbaceous plants, as well as showy annuals, which will grow to perfection on balconies, and with proper care and attention, anyone may possess an effective flower garden on an ordinary balcony. As a rule, plants which thrive well in dry sunny situations will be best adapted for balcony decorations, and those of each variety should be selected which have the most effective blooms, and continue the longest in flower. The effect, it must be remembered, will be judged of as a whole, and at a distance, so that in selecting specimens, costly varieties, that would charm a florist, who could make a careful and minute inspection of each bloom, may not necessarily be best adapted for balcony gardening. The vigorous growing, strong annuals, both climbers and dwarfs, should be included in every collection, and ordinary bedding plants may be judiciously introduced, together with foliage plants of various descriptions. It should not be forgotten, too, that as much taste may be displayed, and as striking contrasts produced, by the judicious disposition of plants on a balcony, as can be shown in the selection and arrangement of the flowers in a bouquet.

Orange Trees, Jessamines, and Honeysuckles Indoors.—I have an old book on gardening which was published in 1717. It mentions a great deal about Orange trees, and also how they had, at that time, Honeysuckles in tubs, like Oranges, inside their windows, which lasted five years in the same pots or tubs, and also Jessamines; so I am trying them. The book mentions several kinds of Jessamines—the common, Arabian, single and double Spanish, Catalonian, American, Indian, and also the dwarf Chinese Orange tree. I think these ought to be grown in rooms, &c., as they used to have them then.—LADY A. M. [There is no difficulty in growing Jessamines or Honeysuckles indoors in tubs or pots, but the Orange trees will be found to do much better if allowed to make their growth in the open air during the summer, after which they should be removed into a house and left to rest for the winter.]

Shell and Glass Flower Vases.—Deep sea-shells, filled with wet Moss or sand, make pretty vases or flowers; and Rosebuds, Pansies, &c., and Geranium leaves, show to great advantage in them. Tall, old-fashioned champagne glasses make very pleasing vases for a few flowers of only one kind; and sprays of *Tropeolum*, with their long curling stems twined round the foot of the glass, while their brilliant flowers fill up its centre, are very charming.—S. O. J.

Short-Stemmed Flowers.—There are flowers whose stems are too short for either bouquets or vases; yet their beauty renders them desirable for decorative purposes, and we can make them available by using shallow plates and saucers of wet sand in which to arrange them. Balsams, with all their parti-coloured flowers, are very lovely when arranged with fresh green leaves, and the deep feathery green of the Parsley. Hollyhocks, and many other short-stemmed flowers, which are not so manageable as spikes, also can be made of use in this way.—S. O. J.

FORMS OF TREES IN LANDSCAPE GARDENING.

In garden landscapes, as well as in those which are the work of the painter, the peculiar growth of the various classes of ornamental trees ought to constitute one of the chief elements in a successful composition. The painter is, as a rule, more successful in this respect than the planter; and for this reason, that he sees at once the complete effect of his work, while the planter has to wait half a lifetime to see even the beginning of the effects which he intends to produce. His work is, therefore, one which requires much more artistic calculation and forethought than that of the painter. It is true that Nature herself aids the horticulturist, while the painter is confined to his pigments and his canvas,—can imitate or select effects that he actually sees before him; but the creator of a living landscape can only see in the mind's eye the eventual results of his composition, which has to develope

in the half-distance; and it should be remarked that, to balance the far-spreading mass of the great Plane, requires not a single Cypress, but a group of them; this is a point to be especially attended to. It often happens that single trees produce a spotty effect, where a group would impart a grand repose, and convey the idea of extent. Wherever, therefore, there is room enough, groups of a sort should in very many cases be adopted instead of single trees, though a single Cypress in some instances produces the desired effect better than a group. In the beautiful garden of Mr. G. H. Bohn, at Twickenham, the advantage of groups of spiral trees is picturesquely exemplified, producing, though in a comparatively small space, a most picturesque and agreeable effect. It has been said that, looking over an expanse of landscape, composed entirely of round-topped trees, unvaried by the Poplar or the cypress to break the monotony of the too level outline, is like looking



Contrasted Effect of Round-headed and Spiral Trees.

itself in the slow course of years. It thus behoves him to study not that which is, but that which will be. He must have clearly in his thoughts the characteristics (at maturity) of all the trees he is about to make use of, just as the painter must ponder over the colours of his pallet. For instance, he must be able to see and appreciate the effect that (on the generation coming after him) a Lebanon Cedar will produce in a certain position; he must fully appreciate, long beforehand, where a majestic Oak or stately Elm will form the key to certain well-calculated effects to be developed in the future; where the spiral Poplar of Lombardy will relieve an otherwise monotonous outline of round-topped Planes or Sycamores, or where the dark and aspiring shaft of the Cypress will mark a certain point in the landscape with telling effect. The illustration which accompanies these remarks shows the fine effect of a great round-topped Plane in the foreground in strong contrast with a group of Cypresses

over an extensive city without steeples, and the remark is not without its force.

NOEL HUMPHREYS.

SPECTACULAR EFFECT OF TREES.

SELDOM have the uses of trees, either singly or in masses, in the production of great scenic effects been more clearly displayed than was evidenced at the recent military review in Windsor Great Park, when the combination of brilliant colours produced by the large bodies of cavalry, artillery, and infantry, formed, as it were, a gorgeous picture set in a massive frame of green trees, the lights and shades being as varied, by the intermittent rays of the sun, as could be produced in any artistic moving panorama. Ten times as many soldiers, with all the usual pomp and paraphernalia of mimic warfare, gathered together on a vast treeless space, could not possibly have produced the pleasing pictorial effects of the six thousand odd troops at Windsor, aided by such accessories as the noble Oaks and Elms that there abound.

Persons familiar with Windsor cannot fail to have a distinct recollection of that most attractive feature of the Great Park, namely, the Long Walk. This is composed of a double line of gigantic Elms planted on each side of the roadway, which is three miles in length, and as straight as an arrow. This huge wall of green formed the background of the military spectacle; and not the least effective display in the proceedings was produced when, the cavalry and artillery having taken up their assigned positions at each end of the long parade, leaving the centre a void, suddenly there was seen to emerge from beneath the Elms a long line of the scarlet-coated guards, marching three or four deep, to take up their position in the inspection line. The other, or spectators' side of the ground, was slightly inclined and margined by the fine trees that form the double line boundary of what is known as Queen Anne's ride—a beautiful turf avenue four miles in length. Beneath the shade of these Elms, with their backs to the declining sun, stood the myriads of spectators, drinking in every fact and feature of the scene, which during the earlier portion of the spectacle was somewhat dimmed by a cloudy atmosphere. Presently, however, the sun shone out intermittently, and as its soft light was reflected here, and the woods threw great waves of shade there, the picture became one from which a painter might have achieved immortality could he as strikingly and effectively have transferred it to canvas. Lovers of the picturesque and beautiful, in natural and artificial scenery, who have not yet visited Windsor, have missed the sight of one of the most charming spots in our little island.

THE LIBRARY.

THE ART OF GRAFTING AND BUDDING.*

THIS is a complete translation of Baltet's "Art of Grafting," many parts of which we published in *THE GARDEN*. It is by far the best treatise on its subject ever published. The *Gardener's Chronicle*, in reviewing the work, made some remarks which reluctantly oblige us to diverge from our rule of not noticing any allusions to ourselves on the part of our contemporaries. It spoke of the "disfigurement which the original woodcuts have undergone in their reproduction in this country," an observation plainly implying that the illustrations were rough copies of the originals. To this we have merely to reply that all the cuts in our edition of the "Art of Grafting" are electrotypes of the originals, which we purchased from Messrs. Masson, of Paris, with whose special concurrence the work has been reproduced by us in this country. The *Gardener's Chronicle* adds, "in *The Garden* the chapters were frequently given as direct communications from the author, which we have reason to know they were not." This is a misrepresentation also; the full name of the book and author was affixed to most of the chapters in the first vol. of *THE GARDEN*, and all the chapters were marked both at top and bottom as continuations of the same subject, so that no person who noticed the articles could have been misled in this respect.

WHAT AM I?†

THIS is the first of two volumes, in which Serjeant Cox has proposed to himself the task of investigating, in a popular and rational manner, "the constitution and functions of the body, mind, and soul of man." The first part, which occupies the first volume, is devoted to a description of the Human Mechanism, Body, Mind, Soul, merely as it is constructed. The second part, it is stated, will be devoted to a description of this "machinery in action," and it will embrace all the phenomena of "intellectual existence" (as distinguished from purely organic life), including the "special conditions of Sleep and Dreams, Insanity, Hallucination, Unconscious Cerebration, Trance, Delirium, Psychic Force, and Natural and Artificial Somnambulism." Serjeant Cox's volume, although dealing with the beginnings of an abstruse subject, is written in such plain language as to be perfectly intelligible to any ordinary mind, and as he takes nothing for granted, but bases all his statements on undoubted evidence, his conclusions are always clear and satisfactory. In his chapter on the Germ he advances an original and important theory, which we commend to the attention of such of our readers as are interested in the subject of hybridisation.

* "The Art of Grafting and Budding." By Charles Baltet. *THE GARDEN* Office, Southampton Street, London.

† What Am I? A Popular Introduction to Mental Philosophy and Psychology. By Edward W. Cox, Serjeant-at-Law. London: Longman and Co., Paternoster Row. 1873.

THE GARDEN FLORA.

NEW AND RARE PLANTS RECENTLY FIGURED.

THE following have recently appeared in the *Botanical Magazine*:—

The Holly Mutisia (*M. ilicifolia*).—This is a very beautiful, shrubby, half-hardy, or cool conservatory plant, remarkable as being a creeping composite, and appears to have been introduced to our collections so long ago as 1832. It is found in the vicinity of Valparaiso, climbing among bushes and undergrowth. Sweet alludes to this plant as having been grown soon after its introduction, but adds that it rarely bloomed. It bears large rosy flowers, quite 3 inches across, which contrast favourably with the dark green Berberis-like foliage. Another effective species, sometimes met with in gardens, *M. decurrens*, bears effective flowers not unlike those of *Gazania splendens*, of a deep orange colour, and is quite hardy in sheltered parts of the south of England. Both species are suitable as cool greenhouse or conservatory climbers.

Large-flowered Rhynchanthera (*R. grandiflora*).—A very effective greenhouse shrub, bearing bright green foliage and numerous showy rosy-purple flowers, which in general appearance remind one of some of the *Monochætums*. It grows in the moist natural meadows of Eastern South America, and extends from the Amazon to Demarara. It has been introduced to our gardens by Mr. W. Bull, and promises to become a useful decorative plant.

Short-spiked Vriesia (*V. brachystachys*).—A handsome Bromeliad from Brazil, having bold and effective foliage of a deep green colour, and spikes of bright yellow flowers; the flower-stem and bracts being of a bright crimson colour, the latter having green apices.

The Blue Daisy (*Bellis rotundifolia cœrulescens*).—This is said to be one of the commonest spring flowers in Morocco, growing on the margins of streams in the valleys of the Greater Atlas. It bears delicate lavender-blue flowers, as large as a shilling, on slender stalks a foot high. The plant was brought home by Mr. G. Maw, of Benthall Hall, Broseley, and has flowered profusely under pot culture. It is well worth the attention of all lovers of herbaceous plants and half-hardy flowers.

Andean Brachyotum (*B. confertum*).—A very beautiful greenhouse, or even half-hardy, shrub, found on the Andes of Ecuador and Peru, bearing small green leaves, and rich purple bell-shaped flowers in tolerable profusion. The plant is easily raised from cuttings or seeds, and forms a compact shrub, 12 to 18 inches high, in the flowering stage.

Tuberled Navelwort (*Colyledon mamillaris*).—A shrubby, succulent plant, that resembles in habit some of the *Pachyphytons*, having fleshy leaves, and slender drooping spikes of orange and purple flowers. It comes from the Cape district, and grows well in an ordinary greenhouse.

Showy Nidularium (*N. spectabile*).—This is a very distinct and effective Bromeliad from Brazil, bearing numerous pale blue flowers surrounded by bright crimson tracts. The foliage is of a bright green colour above, glaucous beneath, barred with brownish purple, each leaf having a crimson spot at its apex. This plant is one of the most ornamental species in the genus, and has been imported by Mr. Wm. Bull, by whom it was flowered in December of last year.

Dwarf Areca (*A. pumila*).—An elegant ornamental Palm, native of the Malayan Archipelago. It grows three or four feet high in cultivation, forming a slender annulated stem, and bears a tuft of bright green pinnate leaves at its apex. Treated like its congeners, it forms a valuable decorative plant.

Mount Atlas Sedum (*S. dasyphyllum* var. *glanduliferum*).—A free-growing variety of a British succulent, tolerably common in the South of England, and useful as a wall or rock plant from its spreading procumbent habit and glaucous colour. This variety bears numerous heads of pale creamy flowers, streaked with bright red, and is found in some parts of southern Europe, while in Spain it ascends the Sierra Nevada to an elevation of 6,000 or 7,000 feet. The fleshy leaves are densely set with glandular hairs. The plant was brought from the Greater Atlas in 1871 by Dr. Hooker and Mr. Maw, with both of whom it has flowered.

Mogadorean Andryala (*Andryala mogadorensis*).—This shrubby composite forms snowy masses on a little islet on the Western Morocco coast, and has not been found elsewhere. Most of the members of the genus are inconspicuous herbs, the present being most interesting of all from a horticultural point of view. It bears flowers as large as half-a-crown, of a bright yellow colour, the disc being of a bright orange. It flowered with Mr. Maw, of Benthall, near Broseley, in April, 1872.

THE ARBORETUM.

SWOLLEN-STEMMED IRISH YEWS.

MR. McNAB laid before the Botanical Society of Edinburgh, on the 12th of June, three specimens of plants of the Irish Yew, raised from cuttings, sent by Mr. John Anderson, of the Perth Nurseries. These specimens, as will be seen by the accompanying illustration, have large tuberos bodies between the stem and the proper roots. Mr. Anderson states that his attention was first directed to them while they were being transplanted. The proportion of these anomalies was by no means numerous. The plants with the tuberos formation were generally under 2 feet in height, while those of normal growth, of the same age, averaged about 5 feet; all, however, having the same healthy appearance. The tubers averaged from 8 to 12 inches in circumference, with a ligneous structure



Swollen-stemmed Irish Yew.

throughout, but showing large annual rings or growths, and covered with bark, having numerous roots proceeding from the under surface. The stem portion, generally 3 inches in height, averaged about $1\frac{1}{2}$ inch round. These Yews were grown on a light sandy soil of a sharp nature. Mr. McNab remarked that such anomalies were not unfrequent in cutting-made plants of various Conifers, but he had never seen the swelling developed to the extent of those now exhibited, with the exception of one cutting-made specimen, also sent by Mr. Anderson from the Perth Nurseries. In this case the tuber, which was 1 foot 6 inches in circumference, was produced by a plant 3 feet in height, with a stem $2\frac{1}{4}$ inches round.

A MONSTER CREEPER.

IMAGINE before you a gigantic Vine, whose deadly grip had destroyed many a goodly tree of fair proportions. Its appearance was truly remarkable, not only on account of its enormous length—six hundred and seventy feet, and in circumference at the base, three feet nine inches, but from the manner of its growth. Originally, at some distant period, it had undoubtedly climbed up the trunk of a large tree, and its close embrace had death in its coils, as it silently wound around its victim, Anaconda like, and pressed it to death. Literally, it was an arboreal Thug of the forest. I will endeavour to draw the outline sketch as clear as my pen can trace it. Fancy then you see a smooth and lofty column, nearly two hundred feet high, spiral in form (and, like a mammoth cable, strong enough to moor all the fighting ships at the battle of the Nile), and from the summit of which, stretched in a horizontal line, its huge continuations for more than one hundred and thirty feet, without any support, until it reached a Eucalyptus tree, on which it rested and encircled the trunk several times, and then threw out a number of stems, which seemed to be taking possession of all the trees in the neighbourhood of its wanderings. It was the opinion of an intelligent shepherd, a burly Yorkshireman man, who directed me to the spot, that the Vine, having strangled the trees which formerly supported it, they had perished and wasted away, and so left it standing as I saw it, a marvel indeed. Without making any pretensions to a knowledge of botany or nomenclature, the shepherd had named it "The Devil's Cork-screw." Its botanical name is *Cissus antarctica*.—*Gardener's Monthly*.

Transplanting old Hollies.—What is the proper season for transplanting old Hollies, say forty years planted; and what is the best way of effecting their safe removal?—J. S. G. [May and June are the best months for transplanting Hollies, large and small. In July the young shoots are too tender to bear the check without serious injury to them. I would, therefore, wait until they get firmer, and transplant—according to the weather—about the third or fourth week in August. If the sun is very strong, shade during the day for the first week after moving, and attend well to watering and syringing overhead at night. Dig well round and under them, so as to get large balls; enclose them safely in mats and boards, and move them on planks with rollers, if the distance is moderate; if far, move them on a truck, or by means of a transplanting machine.]

Transfer of Disease from Scion to Stock.—Some twelve months ago my attention was directed to a tree having golden foliage, which surpassed anything of the sort I had ever seen for richness of colour and effect. On examination I found it to be a Horse Chestnut, evidently suffering from disease, caused either by soil or situation. In July last I got some buds from it, and worked them on some young trees, at about three or four feet from the ground, a number of which have failed, but strange to say many of the stocks have produced foliage exactly like that of the parent of the scion, though the buds themselves are dead. I cannot say whether or not the stocks in which the buds are growing are similarly affected, as it is not usual to let such stocks produce foliage, nor can I see any signs of the yellow colour in the growing buds. My opinion is that many of the buds had not vitality enough to keep them alive through the winter, but that during their short period of existence they managed in some way to impart the variegation to the stock, and that in the case of the growing buds they may have been more vigorous, and by the help of the stock may have outgrown the variegation altogether. Another curious thing connected with the matter is that there is not the least trace of variegation in the foliage of any one of the stocks below the incision made at the time of budding.—H. House, *Durdham Down Nursery, Bristol*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Bitter Osier.—Will you kindly say what the Bitter Osier is, which I have heard highly spoken of, and which is so much advertised?—J. B. [The Bitter Osier is a local name for the Purple Willow (*Salix purpurea*) or one of its varieties. It will escape injury from hares or rabbits.]

The Quickest-growing Poplars.—Wishing to conceal objectionable buildings, will you kindly tell me what Poplars, &c., I ought to grow to ensure a quick growth?—T. B. [The Lombardy Poplar, and *Populus Alba* (the Abele Poplar) and its varieties. Also *P. nigra*, which attains a growth of from 30 to 40 feet in ten years.]

A Pretty Combination.—When visiting the famous Rhododendron nursery of Mr. Anthony Waterer, at Bagshot, a few days ago, I was much struck with his method of planting *Wistaria sinensis* against tall trees, and allowing it to run up and entwine itself about the trunk and branches. The *Wistaria* was associated in this manner with a large Laburnum, and both being in flower together, the effect was very striking indeed. A huge *Pinus ponderosa*, fully 40 feet in height, had a large plant of the *Wistaria* covering its branches, and the purple racemes of flower had a charming effect, standing out against the dark back-ground formed by the foliage of the *Pinus*.—A. D., in "*Gardener's Record*."

THE FRUIT GARDEN.

PACKING CHOICE FRUIT.

NOTWITHSTANDING the amount of care that may be bestowed on the culture of fruit to bring it to perfection, if it has to be sent to a distance when ripe, it runs the risk of being ruined if not properly packed. Many can grow fruit splendidly, but know not how to pack it in the best way for travelling; and, if it should arrive in bad condition, it is a very discouraging termination to a season's hard work and expenses, both for the gardener and his employer; and though such results will occasionally occur even under the best management, still, by a little care and attention, most of our tenderest fruits may be sent long journeys without becoming impaired in quality, or being materially injured in appearance. That this can be done we know on the authority of some of the principal fruiterers in Covent Garden, whose experience on this important subject is certainly worth having. Only the other day we were shown some splendid Grapes that had been sent by rail from the north some hundreds of miles, and they were in as good condition as when cut from the Vines. This fact alone speaks for itself as to the advisability of packing fruit thoroughly well, especially as its value, either for market or table, is just in proportion to the good or bad condition in which it is received. If fruit has to be transported in any considerable quantity, a proper set of flat-boxes should be specially provided for that purpose. These boxes, or trays may be made of either wood or tin, the former being preferable, and the sizes, or rather the depths of the trays, will vary according to the kinds of fruit to be packed. A convenient size for Grapes is 13 inches long, by 12 inches wide, and 6 inches deep. For Peaches, Nectarines, and Apricots they may be of the same size, with the exception of the depth, which should not be more than 4½ inches. Strawberries, Figs, Cherries, and Plums may be packed in trays still shallower, and for these small fruits tin trays will be found to answer better than those of any other description. After the fruit has been carefully packed in the trays as will be presently described, the trays themselves must be packed in a larger case, and in order to be able to do this readily and systematically the trays should all be made of some common measurement especially in reference to length and breadth. A reference to the accompanying illustrations will clearly indicate our meaning, and in order to render the directions as intelligible as possible, we shall refer to each fruit separately; though, in reality, the great secret in packing everything of a fragile nature is to pack firmly without crushing. Another important point is the condition of the fruit when gathered for packing. Fruit for sending long distances should be gathered on a warm sunny day when perfectly dry, and carefully hung, or laid, in a cool airy fruit-room until wanted. On no account, however, let it become over ripe before it is sent off. If the trays are made without lids, a proper packing-case or two of various sizes must be provided; but if they are furnished with lids, an odd one or two can be readily introduced into the vegetable hamper, or several might be packed with sweet hay or clean shavings in a hamper by themselves. Boxes may be made to hold from two to twenty-four trays of the size mentioned above. Both trays and cases may be readily made by any neat-handed carpenter, and the slight primary cost will be amply repaid in a single season. Such boxes and trays will also come in very handy for various other purposes, such as transmitting choice cut flowers to a distance. In the case of show fruit, the best way is to carry it to the exhibition where practicable, or to send a man with it by rail. Grapes for exhibition should be laid in the cases in the position in which they are to be staged, and the boxes should be made with moveable covers, in order that the fruit may sustain no additional damage through moving it again. All that is necessary at the exhibition is to take off the lid or cover and to arrange the shoulders neatly with the scissors, at the same time carefully removing any solitary berries that may have got accidentally bruised.

GRAPES.

Most kinds of Grapes travel well if ordinary care be taken in arranging them in the cases, but the late thick-skinned kinds are the best in this respect. A great deal has been

written on packing Grapes, but we have invariably found the simplest plan the best in practice. Some writers recommend bran as an excellent material in which to pack all tender fruits, but its use requires caution, and we have managed to do very well without it. It generally gives to the Grapes an untidy appearance if any of the berries happen to get bruised, while it does not prevent the berries from rubbing one another in transit. A very good plan to pack this fruit is to enclose each bunch in a sheet of soft tissue paper, screwing it up firmly both at the point and base of the bunch, and then tying them firmly down in the tray on two or three thicknesses of cotton wool, and as close together as possible. Packed in this way, we have sent Grapes hundreds of miles, and the prices received per return from our agent convinced us that they arrived uninjured at the metropolitan market. The best plan, however, is to use no paper at all round the bunches, but to lay them on three or four thicknesses of soft cotton wadding, and tie the shoulders down firmly to the tray with soft cotton or worsted, so as to prevent their moving during the journey. Packed in this way, Grapes will travel hundreds of miles without suffering any material injury. In sending fruit per rail, it should always be packed so that if the box gets accidentally overturned the contents cannot move from their former position. Grapes, of all other fruits, if we except some of the finer plums, are easiest spoiled by any packing material touching the berries and destroying the beautiful soft bloom that constitutes their principal charm in the eyes of a connoisseur. One point of great importance should be borne in mind in packing Grapes, viz., to carefully select the worst side of the bunch, and having laid it downwards in the box never to move it again on any account, for we have found a deal of damage done in packing through indecision, though, of course, this more particularly applies to the younger members of the profession. Very fine grapes are sent to our markets from abroad packed in fine cork dust, and they generally reach this country in good condition, but it will be noticed that only the thick or tough-skinned varieties are sent over in this way. Some late Grapes also travel well in mahogany sawdust, which is fine, dry, and nearly inodorous, but simply tying the bunches firmly on a bed of wadding as above described is by far the most preferable plan, and will be found to answer best in practice.

PEACHES, NECTARINES, AND APRICOTS.

The trays for these fruits may vary from 2½ to 4½ inches in depth according to the size of the fruit. Some gardeners have their trays for these fruits divided into squares by narrow strips of lath, but we prefer to have open trays, as the space can be much better economised than when there are divisions. In packing these fruits, commence by laying two or three layers of cotton wool over the bottom, sides, and ends of the tray. Now take each Peach separately and place it base downwards on a piece of the softest tissue paper, after which take a layer of cotton wool the size of your hand and drop the Peach and paper into the centre, placing it in one corner of the tray. Arrange each fruit in the same manner until the case is full, after which take another and proceed until the packing is finished. Be careful to press the fruit firmly together in the cases, and then spread a sheet of tissue paper and a sheet or two of wadding over the whole to hold them firmly in their places. Peaches and Nectarines require very gentle handling, few fruits showing rough finger marks more plainly than these, and they should be gathered the moment they are ripe, for all tender fruits suffer severely in travelling long journeys when over-ripe. Do not place Peaches or Apricots in cotton wool without first placing soft tissue paper between them, as the cotton adheres to their woolly skin, and it is exceedingly difficult to remove before being sent to table.

APPLES AND PEARS.

The choicest varieties of Apples and Pears for dessert travel well in the flat trays, care being taken to gather the latter a few days before they are quite ripe. Cover the bottom and sides of the tray with a layer of wadding, and envelope each fruit in clean, soft tissue paper. Some of the finer Pears are very delicate, and require as much care in packing as Peaches and Grapes. Apples and large hard baking Pears may be packed in hampers, boxes, or barrels, as fully described in our last year's volume, p. 485.

PLUMS.

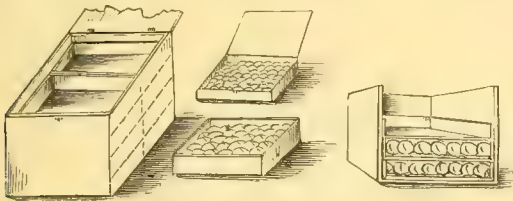
Some of the finest dessert Plums are covered with a beautiful fresh bloom, which easily rubs off unless the fruit is very skilfully packed. We generally like to pack Plums in soft Vine leaves laid on a layer or two of cotton wool. The leaves are best when gathered a few hours before they are wanted. Plums should be very gently gathered by the stalks and laid on soft paper in a tray until packed. When they are wanted for packing, take each up separately by the stalk and lay it gently on a Vine leaf, placing them close together in rows until the case is filled. The closer they are packed, without actually crushing them, the better.

PINES AND MELONS.

These fruits fortunately travel well with ordinary care, and simply require wrapping up in tissue paper and firmly packing in a Grape box. Pines are best laid down on their sides on a fold or two of clean wadding, and wedged up tightly with either cotton wool or paper shavings.

STRAWBERRIES AND FIGS.

These are perhaps the most delicate of all fruits, and require to be gathered to a minute in order to travel any distance without collapsing on the way. If they are over-ripe, it is ten to one that they reach their destination in a state of partially decomposed half-fermented jelly. It may seem a great deal of trouble to pack Strawberries in trays, each berry separately, but in the case of the finest fruit this is in reality the most economical plan in the end, since the best fruit is always expensive, and by adopting this system every berry arrives at its destination fresh and clean. We place either a fold of cotton wool or a bed of soft Vine, Strawberry, Mallow, or Lime leaves at the bottom of the tray, and the fruits—carefully picked when thoroughly free from moisture—are then laid in rows separately, with one of their own leaves intervening between each berry. Some Strawberries



Fruit trays and packing boxes.

travel much better than others, though, at the risk of repetition, we lay great stress on their being in a fresh state when gathered—ripe, but not in the least over-ripe, bruised, or decayed. Of those varieties found to bear considerable knocking about, we may mention most of the Pines, British Queen, Keen's Seedling when not too ripe, and Sir Harry. Thin boxes or trays with lids, say 12 or 14 inches square, and about 2 inches deep do well for Strawberries and Figs. After the fruits are laid in tightly as described above, lay a clean sheet of tissue paper over the tips of the leaves and then a layer or two of soft wool so that when the lid is shut down all is quite firm and tight within. Packed in this simple manner it matters little which side of the box is uppermost, and you may even laugh at the delicate manner in which the railway porters pitch your choice fruit into the luggage van, or out of the van on to the platform. These small tin trays can be packed tightly in the larger cases along with the trays already described, containing Peaches, Grapes, or other choice fruits.

Raspberries, Cherries, Gooseberries and Currants, when very fine, are useful as giving variety to the dessert and should be carefully gathered with stalks and packed as recommended for Strawberries. A great deal depends on not having any bruised or over-ripe fruits among them at starting. Paper shavings will be found very useful for packing, and a good supply of tissue paper, shavings both of paper and also from inodorous wood should always be kept in the fruit-room or packing shed ready for use. For cut flowers we use lighter boxes made either of paste-board or what are technically called chips, *i.e.*, very thin slices of some tough wood. Never use Moss or straw, and if hay is sometimes used instead of shavings for packing the trays in the larger cases see that it is dry and sweet.

B.

PLANTING OUT FORCED STRAWBERRIES FOR A MAIN CROP.

For the last nine years we have planted out our forced Strawberry plants in a systematic way, for a main crop of fruit, and have never in one instance failed in securing a most abundant crop. I am aware it is a common practice to plant out forced plants as a kind of auxiliary crop, most dependence being placed upon the permanent plantations; but where Strawberries are forced in any quantity, I would advise the planting of them out in a regular way for a supply of fruit for preserving and other purposes. Such plants bear excessively the first year, and never fail. The second year they will bear a heavy crop again, but after this they should be trenched down. Besides, the plants are soon enough if they are planted out in August. We follow our second early Potatoes with the Strawberries, and have been as late as September in finishing, but the last-planted plants bore just as well as the first the following season. Our practice is to put the plants out in a sheltered corner as they cease bearing; if the pots are wanted, the plants are turned out and the balls packed closely together, filling up the crevices with a little fine soil, and in this way they are left till they can be planted out, not forgetting, in the mean time, to water them abundantly. If the ground has been manured heavily for the Potatoes, it is just dug over and the Strawberries are planted at the same time, 18 inches apart between the plants, and two feet between the rows. This is ample, for forced plants do not make such growth as permanent ones: neither do they root deeply, for which reason they are somewhat apt to suffer from drought; but a thick mulching of half-rotted stable litter put on early in spring prevents any risk of this kind, and works little less than a miracle in swelling off the fruit and promoting the general health of the plants. We have often gathered more than a hundred weight of Black Prince from a piece of ground of less than half the extent that permanent plants would require to produce the same, for we plant this variety (forced plants) one foot apart between the plants, and 18 inches between the rows. Last year we began planting about the middle of August, and the plants are now perfectly smothered with bloom, and the forced plants of 1871 are but little behind them. I ought to state that, when the plants are put out, the old leaves which have been developed in the forcing-house should be shorn clean off, and the balls should be buried as deeply as is possible without burying the crowns altogether. Plants of which the surface-roots are left exposed to the air never do so well.—J. SIMPSON, in "The Gardener."

THINNING ORCHARD FRUIT.

It is a good time now to remind fruit-growers about thinning out fruit. With young trees this matter is especially important, and perhaps with no tree more so than the Pear. The policy of allowing young trees to bear all they will is simply ruinous. In some cases a market grower may get more money for his product during the current year by adopting this course, and yet that does not always follow; but, if he does, he will most assuredly have to pay for it in future. What a sagacious man wants to secure, when his orchard is young, is growth—not an extraordinary, but a healthy growth. Then, when the trees commence bearing, they will be able to bear good crops at once, large enough to make up in a few years for not bearing when quite young. As a matter of fact, the crops borne by quite young trees are always small; but, at the same time, are such great drawbacks on the strength and vitality of the trees as to impede their development most seriously, causing them to fall so far behind other trees that a stranger would think them several years younger. The limbs, too, being tender, become distorted by the weight of fruit; and a habit of early bearing being also induced, there will be an annual tendency to produce fruit instead of wood and foliage, accompanied by an inability to perfect it, which will increase from year to year, until the poor thing dies prematurely. I am well satisfied that in planting an orchard, if the owner would make a vow not to allow a single tree to bear a solitary specimen for the first seven or eight years after planting, and would give his time and attention to perfecting the growth of his trees, and to pruning them properly, he would get more valuable fruit from his orchard at the end of, say fifteen years, and have a much finer orchard than would otherwise be the case. The trees would be more uniform in growth, be larger, better shaped, have a much better development of roots, thus enabling them the better to withstand high winds or tempests, bear greater crops, and look better—in short, be better in every conceivable way. Some may claim that heavy applications of manure to young bearing trees will make due amends, and maintain growth and vigour. I do not think that this is the case at all. If a tree is allowed to over-bear this year, its constitutional vigour is impaired—it becomes *sick*, in a measure, and it is no more in the condition to appreciate the benefits of this exceptional manuring than a sick man is to appreciate extra

good eating while his illness lasts. What is important for the orchardist to remember is, that fruit-bearing and a regular healthy growth in young trees cannot go forward at the same time; that growth is the natural business of a young orchard, as it is of human beings and animals; and that fruit-bearing—which is reproduction of the species—cannot profitably be attempted until there is at least some approximation to a full growth and development. The wise fruit-grower will, then, not neglect thinning; and now is just the season for it. There is far more danger of leaving too much than too little. Every imperfect specimen, every one stung or marred by insects, had better come off. What is left will be the better for it in every way.—*Cultivator*.

THE KITCHEN GARDEN.

CHINESE VEGETABLES.

GARDEN vegetables, of some sort or other, almost always form a part of the meals of the Chinese, and every cottager has a patch of ground near his habitation, from which he raises a supply. Leguminous and cruciferous plants are cultivated more or less in all parts of China, and some of them almost as extensively as the Grains. Among the former class, Beans of various kinds are common; the Kidney Bean and the Horse Bean are well known. From the *Dolichos soja*, or Soy Bean, is manufactured the condiment called soy, much in use among the Chinese to season their food. Green Peas are in season in Canton in February and March, but of an inferior size and flavour. Peas and Beans are planted in some places between the rows of Grain, and come to maturity after the first crop has been gathered. Among cruciferous plants, the Cabbage and Turnip are the most common, and the general name of *tsae* (tsay) is given to all plants used for salad, as Lettuce, Cabbage, Spinach, and also to the leaves of Turnips and Radishes when used as Greens; and *tow* is the term for Pulse Greens of every kind. There are several varieties of Cabbage, and the Chinese bestow more attention on this than on any other garden vegetable. The most common is called *pih tsae*, or "White Greens," from its being blanched, but it more resembles Kale than Cabbage, and does not form a head. The plants sometimes weigh 15 or 20 lbs., and attain the height of 3 feet. When eaten raw this Cabbage or Kale is not inferior to Lettuce as a salad; when boiled, the taste resembles Asparagus; it is also pickled like German sour kraut, fried in oil, and cooked in other ways. The Savoy Cabbage is also sometimes seen at Canton. Turnips are planted as a second crop in autumn, and being brought to market in the winter, are extensively used. Radishes are grown in the vicinity of Canton, but the size is small, and the flavour, both of them and Turnips, is not so good as those raised in more northern countries. Onions and Garlic of a small size, are used abundantly, and prepared in many ways, as pickling, frying, boiling. The alliaceous odour is perceptible in the cooking rooms of the people, and their persons often remind us of it. Carrots, Asparagus, Gourds, Squashes, Melons of many kinds, Cucumbers, Pumpkins, Tomatoes, Winter Cherry, Egg Plants, &c., are to be found in most parts of the country. The Pumpkins, Melons, and Cucumbers, known by the general name *kwa*, are of a good size, but of an inferior flavour. Some of these are eaten raw, others are cooked, and all are used to a considerable extent. The Taro, Water Chestnut (*Trapa bicornis*) or Water Caltrops, of which an illustration is given in THE GARDEN (see p. 214), and Nelumbium or Lotus, are grown in the water, and they also grow the Irish Potato, Yam, and Ground Nut. The terraces on the hills in the vicinity of Canton are not often destitute of the sweet Potato. The Irish Potato is confined to the immediate vicinity of Macao, but it would be a valuable acquisition to the country, especially the northern parts, if it was extensively cultivated. The Chinese are excellent gardeners, and often make a patch of ground, which with us would scarcely suffice to support one man, feed a whole family. The superiority of their horticulture is a counterpoise to, or perhaps the result of, the insufficiency of their agriculture, which obliges them to seek in their gardens an indispensable portion of their food.

A. H.

CORN SALAD OR MACHE.

THIS plant, found wild in many parts of Europe, and abundantly used as a salad on the Continent, is not grown so much with us as it deserves. To our taste, there is no salad whatever superior to this, with a sprinkling of half-blanchéd Celery, both to be used in a fresh, clean, and crisp state, in which condition they are not always found in markets. Of course, we suppose them to be dressed with good oil in the proper way. Nothing is easier of culture. Two kinds are in cultivation: the Round and the Regence. The former, which grows spontaneously in all meadows of our latitude, is sown in market gardens, from the month of August till October, among plantings of Cauliflowers, Endive, or Chicory; the surface of the soil being merely scratched before sowing, and then lightly raked over. In September it is sown along with Onions which are not to be transplanted, or it may be sown among the same kind of Onions if transplanted, or with Welsh Onions, taking care to add a good layer of spent manure. The Regence is sown broadcast at the end of September, or in the course of October, in beds prepared to receive transplanted Onions, or in empty beds in which it is intended to sow Melons in April. The August sowings yield a crop in October; the September sowings yield in November, and all the winter until March, when the plant runs to seed. The Regence is the latest, its last crop being gathered in April. In order to obtain good and true seed, a bed must be prepared on purpose, being first dug over and then levelled and compressed by placing a plank on the surface and walking upon it. The finest plants are then put in as thickly as possible. The seed is swept off the ground with a broom, which explains the necessity of having previously made the surface hard and level. The seed keeps good for two or three years. In order to separate it from the dirt which is swept up along with it, it is thrown into a bucket of water; the seed will float while the earth sinks to the bottom. The seed is then collected and dried in the sun. The weeding of the seed-bed should be well attended to.

TURNIPS IN DRY SOILS.

IN dry soils Turnips are often, in hot seasons, not only of inferior quality, but it is also difficult to get the seeds to germinate freely and regularly, and to induce the young plants to make a sufficiently rapid growth to escape the ravages of the fly. Where a piece of cool-bottomed land that has been well manured and deeply dug in the previous autumn or early winter can be reserved for the main crop, the chances of obtaining good succulent roots are pretty well secured. But if (as frequently happens) the Turnip crop has to succeed another crop only just cleared off, the following I believe to be the best plan to secure good plants and induce a rapid growth. After the land has been manured with thoroughly decayed manure and dug over (it is a bad plan to dig long manure into land that parts with its moisture rapidly any time during the spring and summer), spread on the surface a good dressing of burnt earth or charred rubbish, and in raking down the surface this will mix well with it, and will not only act as a valuable manure, especially suitable for Turnips, but will also tend to retain the moisture in the land. By a little forethought in the periodical clearings of the rubbish-yard, a heap of this kind of material can always be held in reserve for such emergencies. After the land has been thus prepared, wait for a shower, if possible, before sowing the seed. If this cannot be done, I prefer sowing in drills, and drawing the drills rather deeper than would be necessary for early crops, so as to lay the seeds in the moist soil which is generally found under the surface, if the land has lain two or three weeks after being worked to consolidate. If the weather continues hot and dry, I shade, in order to assist the land to retain its moisture, which is done in the following way; and this not only keeps the soil comparatively cool, but also keeps small birds from pulling the plants up as fast as they appear in order to get at the seed. If, then, the weather is dry and hot, and the seeds do not germinate quickly, we have a number of short forked sticks, which are always kept handy, and these are pushed into the bed at intervals of 3 or 4 feet, and over them are suspended one or more lengths, as may be necessary,

of Britain's netting, that we use in the spring for protecting wall trees. It is kept about a foot from the ground on all sides; there is thus a continual circulation of air. But the ground, being shaded from the hot sun, retains its moisture, the seeds vegetate strongly and rapidly, and, as soon as the plants are fairly up, the nets are removed and the hoe used regularly. There is nothing like a frequently-stirred surface to encourage rapid growth, and rapid growth is essential to mild flavour in vegetables. The two best Turnips for main crops on scorching land are the American Red Stone and Orange Jelly. The Strap-leaved Stone is very useful for early work, and the Chirk Castle Black Stone for standing the winter.

E. H.

The Potato Disease.—I have read with great pleasure the very interesting article on the Potato disease published in *THE GARDEN* (p. 500). The practical means of checking the development of the fungi which Mr. Carruthers points out are—burning all diseased plants and careful drainage. It seems to me that another obvious inference from our present knowledge of the nature of the disease is, that it is unwise to plant the same ground with Potatoes for two successive seasons, independently of any reason for not doing so apart from the question of disease. If, as appears to be the case, the parasitic fungus will not germinate on any other plant than the Potato, a change of the Potato ground every year must have a favourable effect.—H. W. M.

Egg-plant Culture.—I have repeatedly failed with this plant in my stove, and shall be obliged by your telling me how to manage it.—*INQUIRER*. [The Egg-plant is very easily cultivated in a brisk heat; it enjoys plenty of food and moisture; but red spider is very much attached to it, and frequently succeeds in dwarfing, and indeed destroying, the Egg-plant in the stove. In dung pits, and with a moist bottom heat, the spider does not so readily take hold. Grow freely, water well, keep clean, give free pot room, and good soil, and you will succeed. In America the Egg-plant produces fruit as large as a medium-sized Gourd, and properly cooked, is a great delicacy. We have never seen them half so fine in France or England.—*ED.*]

New Peas.—I find after the best possible trial and the closest and most impartial scrutiny, that Emerald Gem and Danecroft Rival Peas are absolutely identical. 'I made this assertion elsewhere last year after seeing them both grown together, and the experience of the present year has entirely confirmed that opinion. Harbinger, another new Pea, was twelve or fourteen days in advance of Easte's Kentish Invicta last year, and about seven days in advance of Dillistone's. To Invicta, Harbinger bears the closest possible resemblance in all points. This year the difference between Harbinger and Invicta is reduced to 5 or 6 days, and but a day or two earlier than Dillistone's. This alteration arises from the fact that the seed sown this year was all saved from plants grown in the same garden, a matter of no small importance in the testing of Peas, as it is a well-known fact that plants from seeds saved from a sort grown in a hot dry locality, will prove much earlier next year than seed saved from plants grown in a colder locality. Thus, in a trial of Peas, the second or third year's growth is of much more importance than the first. The earliest, and probably very best, of all new early dwarf Peas is Unique, a really dwarf William the First. It grows to an height of about 16 inches, and beats little Gem and other early Dwarf Marrows. The pods and Peas are deep green in colour, and when it becomes plentiful it will prove a first-rate kind for pot culture.—A. DEAN, *Bedfont*.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Sawdust as a Manure.—Will you kindly tell me what is the value (as a manure) of sawdust that has been used for bedding horses? I have a large quantity of it, and should like to know how it may be used to the best advantage.—H. [A friend tells me that it forms the best possible foundation for hotbeds; another that it makes a strong and excellent manure for both kitchen and flower garden; and a third that he had used it with wonderful effect on Clover and Grass. If, however, it be applied too copiously, the Grass is liable to be burnt up by the quantity of ammonia contained in the sawdust.—M. E. F.]

Planting Asparagus.—I have invariably found Asparagus to succeed best if removed while in active growth, even as late as July. I have never known one-year seedlings to fail, and I have never known perfect success to attend the removal of older plants. Many object to the loss of time caused by planting only one-year old seedlings. To overcome this difficulty, I manure the ground very highly on which the seed is to be sown. It is sown in rows a foot apart, and the young plants are thinned to 4 or 5 inches asunder, by which means I obtain better roots than ordinary two-year olds, and from these a little "Grass" may be cut twelve months after planting.—RICHARD SMITH, *Worcester*.

THE HOUSEHOLD.

FAIRY RINGS.

(MARASMIUS OREADES).

THIS Agaric, sometimes called "Scotch bonnets," may be gathered from June to November, and a most pleasing and savoury esculent it proves when judiciously prepared for the table. It requires, however, somewhat nice care in its discrimination, as dangerous and ill-conditioned kinds may readily be mistaken for it by superficial observers. I append the characters by which it may be known, I think, by anybody. It is the little buff-coloured Agaric so common in upland pastures during the autumn months, chiefly appearing in rings or portions of rings. It differs from the Mousseron in being small and slender. It may be found in various stages of growth, from the little buff bell to the more expanded cap. The cap is marked with a decided boss, or umbo as it is termed. This boss is darker than the rest of the cap, and appears "as if scorched," as Dr. Badham justly remarks. The stalk or stipes is solid and elastic, so that the fungus may be pulled up from the grass-roots to which it clings without fear of being broken. The stalk, moreover, is usually thicker at the top, under the pileus, than it is below, and is covered with shaggy scales. The base of it is darker than it is above. The taste of the young buttons is Mushroom-like and nutty, though the smell is strong and powerful. The whole plant, I may remark, is leathery, tough, and elastic, the cap being often cracked and wrinkled in mature specimens. These characters ought to be sufficient to distinguish it from its two congeners, *Marasmius urens* and *M. semilobatus*, the latter of which is viscid and as if varnished, as Dr. Badham



Marasmius oreades (Fairy-ring Champignon). Pastures, roadsides, and downs, in the autumn; colour, pale buff; gills broad and far apart; diameter, one to two inches.

observes, and the former fragile and easily injured when it is moist. However dry and withered the members of the group *Marasmius* may become, they may mostly be revived and restored to their early condition by immersion in water, after being subjected to drought and dryness for many weeks, and even months.—P. INCHBALD, *Hovingham Lodge, near York, in Field*.

The Cuckoo and the Gooseberry Caterpillar.—About three weeks ago a large quantity of Gooseberry bushes in the kitchen garden here were much infested with the caterpillar peculiar to the Gooseberry. When the men were not about, and on Sundays, some cuckoos were observed every day on the bushes feeding on the caterpillars, which they thinned off considerably in a week or two. I had them disturbed as little as possible, and sometimes as many as four or five at a time were seen enjoying their feast. The cuckoo, from this habit of feeding on caterpillars, has, I think, a strong claim to be put in the schedule of the Birds' Protection Bill. During the season of the Gooseberry caterpillar I do not find that any of the small birds do much good in clearing the bushes of them. Perhaps the song thrush is as useful a bird to the gardener as any, for in the wet summer and autumn of last year it fed on the legions of slugs and snails all the time when fruit was scarce. The thrush will have its dessert off the fruit not netted up, but not in the bold daring way of the blackbird, who is the greatest pest of all the small birds, except the bullfinch.—WILLIAM TILLERY, *Welbeck Gardens*.

Grape Seeds.—Mons. T. Schmidt calculates that 30 to 40 lbs. of seeds per acre of vineyard are ordinarily produced, and, with the exception of the tannin which they contain, and which is used in the clearing and manufacturing of wine, the whole is looked upon as a waste product. When, however, these seeds are properly roasted and ground, they possess an aroma very much like that of East India coffee, and the beverage obtained therefrom is about the same in taste, although not in strength, as coffee. The author recommends the following mode of procedure:—Take $\frac{1}{2}$ ounce of the ground preparation, and boil it for five minutes in a quart of milk, adding a little cinnamon and cloves. When filtered and sweetened to taste, a beverage is obtained resembling chocolate, with the same reddish tint. It also becomes thick like cocoa on being allowed to stand for a while.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Bedding plants are now growing freely, and require a little attention. Peg down Verbenas, Tropæolums, Heliotropes, Petunias, and plants of similar habit; pruning in, at the same time, all straggling shoots. Plants grown principally for the beauty of their leaves, such as *Caladium esculentum*, *Monstera deliciosa*, *Abutilons*, India-rubber plants, *Cannas*, &c., grow much better if dewed overhead in the evenings with clean water than when otherwise treated; and vigorous-growing subjects of any sort are benefited by mulching the soil over their roots with leaf-soil or cocoa-nut fibre, so as to prevent a too rapid evaporation of moisture. Pinch off flower-spikes from *Cerastium*, the variegated *Polemonium cæruleum*, golden *Feverfew*, and similar plants. Propagate *Pelargoniums* from cuttings as soon as they can be spared; a warm border, fully exposed to the sun, suits them perfectly. The sooner *Verbenas* are propagated now the better; a well shaded cold frame is the best position for them. Keep all flower-beds neat and clean; the lawn well mown, swept, and rolled; and the walks clean by means of hoeing or hand-weeding, and roll them frequently, especially after rain.

Herbaceous and Alpine Plants.—These are now everywhere in great perfection. Strong-growing sorts, such as *Clematis erecta*, *Hollyhocks*, *Delphiniums*, some sorts of *Campanulas*, *Lilies*, &c., if in danger of being broken by wind, should be staked. Mulch *Phloxes* and choice subjects with leaf-soil or thoroughly-rotten manure, supply them liberally with water, and occasionally with liquid manure. Gather seeds as they ripen, and, as a rule, sow them soon afterwards; unless, however, seed-saving is an object, the flower-spikes should be cut over as soon as their beauty is past. Transplant from the seed-bed to a rich border, *Sweet Williams*, *Canterbury Bells*, *Hollyhocks*, *Wallflowers*, &c., and propagate, by means of cuttings, most kinds of hardy herbaceous plants. A shady position at the base of a wall is a good situation for them. Remove annuals when their beauty has become impaired; thin late sowings, and sow again quick-growing sorts for late autumn blooming.

Bulbous Plants.—*Lilies* are now nicely in bloom, as are also *Alstroemerias*, *Hemerocallis*, *Irises*, and some sorts of *Alliums*. *Hyacinths*, *Crocuses*, *Tulips*, *Muscari*, *Ornithogalums*, *Crown Imperials*, and other *Fritillarias*, early flowering *Scillas*, *Triteleias*, *Erythroniums*, and other early blooming plants, may now be lifted and replanted; but unless it is necessary to move them, most hardy bulbs are best left undisturbed. If, however, they must be lifted, do not remove the leaves unless they part easily, and such sorts as have fleshy roots, *Lilies* for instance, should be replanted almost immediately. *Anemone* and *Ranunculus* roots should be lifted, dried, and stored away until the time comes round for replanting them; if left in the soil after the tubers are ripe they are apt to start again, and thus become greatly impaired in vigour.

Roses.—These being now everywhere in bloom, proper preparations must be taken to prolong their beauty by keeping them clean and healthy. Mildew must be checked on its first appearance by means of dustings of sulphur; aphides by rubbing them off with a tooth brush, or dipping the affected shoots in strong tobacco-water, and as regards leaf-caterpillars and grubs they must be hand-picked. A mulching of thoroughly decayed manure over the roots, and frequent applications of manure water, greatly invigorate the plants and enlarge and brighten the flowers. Tie in rampant shoots, and remove such as are soft, watery, and superfluous. Proceed with budding, and in preparing stocks for that purpose remove the greatest part of the shoots a week or two before the buds are inserted; but do not touch the branches which are to be operated on unless they are very long or over vigorous, when a portion may be removed. If not already done, transfer the winter and spring grafted stocks from pots to the open ground, which should be mulched, and re-pot and plunge outside such as are intended to be retained for pot-culture. All pot *Roses* should be plunged out of doors, and a dressing of manure should be placed over the surface of the soil.

Shrubby.—Specimen evergreen shrubs may be pruned into shape, and the best of the prunings may be used for purposes of propagation. Hedges of *Yew*, *Arbor-Vitæ*, *Privet*, *Holly*, &c., should be pruned into shape with the knife in conspicuous places; but, in out-of-the-way situations, a pair of shears may be used, as with these the work is more expeditiously performed than with the knife. Cut out dead and dying branches from trees and shrubs, and proceed with the budding of *Hawthorns* and other ornamental trees. Decayed flowers and seed-pods should be removed from *Rhododendrons* and *Azaleas*, if time can be spared for that purpose. Transplant evergreen shrubs, taking care to lift them with good balls, but do not interfere with the deciduous kinds. Layer shrubs

of all sorts, also *Clematises*, using some light sandy soil for placing around the incision, and pegs to fix the shoots in the ground. In the case of *Clematises*, *Japanese Maples*, and others of that class, it is better to layer them in pots sunk in the soil than otherwise, so that in autumn they may be removed from the parent and transferred to a greenhouse, where they can be more safely nursed than they would be in the open ground.

Conservatory.—Encourage the growth of plants in general, but at the same time use all available means for promoting early maturity. Keep climbing plants well thinned and gracefully trained, permitting them to droop in festoons rather than having them tied up in any formal way. Evergreens and such deciduous plants as are not in bloom are benefited by gentle syringings in the afternoon. Decaying flowers and leaves must be picked off, and neatness and cleanliness preserved everywhere. From the greenhouses and pits, introduce successions of annuals and other plants, whether remarkable for flowers or foliage, and remove plants, the beauty of which is over, to make room for them.

Stoves.—Encourage growth, shade from bright sunshine, ventilate freely but cautiously, syringe twice every fine day, water abundantly, maintaining a moist atmosphere, and economise fire-heat by shutting up early. *Ardisias* in flower should be kept in a dry corner, in order to induce them to set their berries better than they otherwise would do. *Poinsettia* stumps, cut down, should be kept in a growing condition, and the cuttings, made of the branches, should be potted singly and kept in a warm place near the glass. Plants of *Euphorbia jacquiniæflora* should be grown near the light, as situated in that way they set their blooms better than when removed farther from it. Permit early-bloomed *Gesneras* to go to rest gradually, and keep succession plants of them in a moderately cool place, so as to retard, and in that way prolong, the season of flowering. Shade *Gloxinias* that are in bloom, and do not touch their leaves, nor the leaves of *Gesneras*, with water, as when wetted they are apt to become spotted. In order to make fine specimens of *Achimenes*, grow them in large suspended wire baskets, in which a good plant has been placed in the centre, and a quantity of smaller ones should be introduced between the wire meshes. In this way, and by means of pinching back the shoots, watering liberally, and syringing once a day, immense masses of flower may be secured. Save seed of *Anthurium Scherzerianum*, prick out this year's seedlings, and pot them singly when they are sufficiently large to handle. Re-pot soft-wooded plants, and also young plants of any description before their roots become matted together, but avoid over potting. Increase the stock of *Begonias* by means of leaves and cuttings, *Gloxinias* from well ripened leaves, *Achimenes* from cuttings, *Pentas carnea*, *Eranthemums*, *Æschynanthuses*, *Gardenias*, *Franciscea*, *Coccocypselums*, *Scutellarias*, and many others from cuttings, choosing stubby half-ripened shoots for the purpose, with, if practicable, a heel of the old wood attached to them; *Ficus elastica*, *Medinilla magnifica*, *Stephanotis*, *Theophrastas*, *Aralias*, *Dracenas*, *Dieffenbachias*, &c., from eyes of the stems or branches, and, if possible, with the exception of the two last named, they should have a leaf attached to each eye. Increase the variegated *Pine-Apples* by means of gills and suckers, and the *Screw Pines* from suckers and seeds.

Greenhouses and Forcing Pits.—Sow seeds of *Cinerarias* and *Calceolarias*, shade them, do not water them until they have germinated, and pot the suckers from old plants of the former as soon as they are large enough for that purpose, placing them for a time in a cold frame, having a north aspect, keeping them rather close. Sow Chinese *Primulas* for late blooming, and re-pot where necessary the earlier sown ones and those propagated from cuttings. Keep up a succession of *Coleuses*, *Balsams*, *Cockscombs*, and other *Celosias*, *Schizanthuses*, &c., and keep them dwarf and stubby by setting them near the glass, and in light and airy houses. Use such pits as have a north or east aspect for retarding *Pelargoniums* and other subjects required for blooming late in the season. Show *Pelargoniums*, the beauty of which is over, *Hydrangeas*, *Spiræas*, &c., should be placed outside in some shady situation. The *Pelargoniums* should be dried off, the *Hydrangeas* when ripe should be cut back, and the growth of suckers should be encouraged; when large enough, the latter may be separated and treated as cuttings; plant the *Spiræas* in a rich and shady border. Place tree *Carnations* in pots for late blooming outside or in a north house; and, as regards pot *Roses*, plunge or transplant them out of doors. Sow seeds of *Humea elegans*, and prick off young plants of it raised from previous sowings. From *Aloes* and *Yuccas* remove all suckers, pot them in yellow loam, grow them in a cold pit, and they will form nice plants by next year. Increase *Bouvardias* by means of cuttings, pot those already rooted, and re-pot and pinch older plants; in all cases using a moderately light soil. Supply *Chrysanthemums* liberally with water, and put a

layer of well-decayed manure on the surface of the pots, which should be out of doors, plunged in ashes; in order to have very dwarf plants, propagate now some of the shoots from layers or cuttings. All hard-wooded greenhouse plants must be kept in shape by means of repeated pinchings, so as to promote a stocky growth, and any rooted plants from spring-struck cuttings should be potted at convenience.

Orchids.—All Orchids growing freely should be examined, and any requiring shifting should receive that attention. Maintain a night temperature of about 70° or 75° in the East Indian house, allowing 10° or 15° of a rise during the day. The Mexican house should be kept about 5° lower, and the coolest house—the New Granadian one—5° under that. Look after greenfly, scale, thrips, red spider, woodlice, wireworms, cockroaches, and other pests, and employ every effort for their extirpation. Keep up a moist atmosphere by syringing and spilling water on the benches, passages, and walls; but do not water the plants too liberally. Admit air freely but judiciously, and shut up early in the afternoons. Do not shade the plants too much; merely protect them from brisk sunshine, and endeavour, by abundance of light and other means, to harden and mature the young growths.

Ferns.—In the tropical Ferneries, fire-heat can now be almost dispensed with; the temperature, however, should not sink under 70° at night, and 10° more would do no harm; an increase of 10° may be permitted throughout the day. Maintain a moist atmosphere; water growing plants abundantly, dew them gently overhead with tepid water, but refrain from damping the fronds of *Gymnogrammas*, *Cheilanthes*, and *Maiden-hair* and other such Ferns, and re-pot any that have well filled their pots with roots, and that are not already in large pots. Seedling Ferns must be pricked out after they have germinated, and can be transferred without difficulty from the seed-pans. Spores should always be sown as soon as they are ripe; and young plants growing on *Asplenium bulbiferum* and *viviparum*, *Woodwardia orientalis*, and others, should be separated and treated as ordinary plants, or the fronds containing them may be taken off and layered like *Begonias*. Keep a sharp watch over insects of all kinds; remove decaying fronds, and everywhere preserve neatness and order.

Camellias.—Most Camellias have their wood and flower-buds by this time sufficiently developed to necessitate removal to cooler quarters, so as to get their wood well ripened. Examine spring-grafted and inarched plants, and unfasten all ligatures from such as have united and are growing, but still keep them in rather close quarters. Do not entirely head back the stocks to the scions until the latter have fairly started into growth, but shorten any too vigorous growth on the part of the stock. The end of this month, and for six weeks afterwards, is a good time for grafting Camellias; therefore have good, healthy, and well-established stocks in readiness, also a close pit or frame inside a cool house for the reception of the "worked" plants. They require dense shading for a time, and any that are too tall may be laid on their sides or in a sloping direction.

Azaleas.—Shift such plants as are growing freely, using as soil good peat and some white sand only; water abundantly, and maintain a moist atmosphere; pinch back young plants, and destroy red spider and thrips on their first appearance. Top-dress such plants as are not shifted with good soil, adding, at the same time, a little of Standing's manure. The last fortnight of this month and the whole of next month is an excellent time for grafting Azaleas, selecting for stocks such kinds as *Verschaffeltii* and *Phœnicea*. Treat them like Camellias.

Heaths.—Most growers now place their plants on beds of ashes out of doors; and, when this is done, if the pots are not plunged, a piece of matting or thick cloth should be placed on the side exposed to the mid-day sun to keep the roots from being injured. Quick-growing and soft-wooded kinds do well thus treated; amateurs will, however, find it safest and best to keep their plants in well-ventilated pits or frames, in which they will not be subject to great fluctuations of temperature. Gently dew the soft-wooded kinds overhead, and use flowers of sulphur to counteract mildew, should it make its appearance. Pick off all decaying blooms and seed-vessels, which only tend to weaken the plants on which they are allowed to remain.

Hardy Fruit Garden.—Shorten and thin shoots on espaliers and wall trees, beginning at the tops of the trees first. Apples, Pears, Plums, and Cherries may be subjected to this treatment, with the exception of Morellas, which bear next year's fruit on this year's wood. Syringe wall-trees now and then with clean water, and afterwards with tobacco-water, as a preventive to aphides, or dust the affected parts with powdered tobacco or snuff. Peach and Nectarine trees ought to be syringed every fine afternoon with pure water; but other trees may receive this attention less frequently. Pick off

curled leaves, hand-pick grubs, and wash such parts as are affected with American blight with a mixture of soft soap, sulphur, and water. Any shoots of young trees and standards affected with aphides will be effectually cleansed if the parts affected are dipped in a decoction of Quassia chips and soft soap. Young fruit-trees must now be pruned to the number of branches required to be retained, which should be tied out to stakes. On high-trained trees and long-stemmed standards several shoots should be allowed to grow on the stem, but kept shortened to about 6 inches in length, so as to proportionally increase the bulk of the stem, and to keep the stem from becoming hide-bound; they must, however, be removed in winter. Bud Cherries first, then the other kinds of stone-fruits, and last of all Apples and Pears. Previously prepare the stocks by pruning their stems; but leave the head untouched, so as to utilise the sap. Stocks grafted in spring which have failed may now be budded; and, in the case of those that have taken, have the ligatures removed and the scions firmly supported by means of stakes. Protect Cherries, Strawberries, Gooseberries, and Raspberries from birds. Thin Raspberry canes, where too thick, by removing the weakest; and layer Strawberry runners, both for forcing and for forming fresh plantations, cutting off the runners beyond the layered joint. In the case of those to be forced, the joints must be inserted in sunk 3-inch pots filled with rich soil; and, as soon as they are fully furnished with roots, the runners may be separated from the parent plants. Remove all useless runners.

SOCIETIES, EXHIBITIONS, &c.

ROYAL BOTANIC SOCIETY.

JULY 9TH AND 10TH.

THIS, the last of this society's exhibitions this year, hardly sustained the character of its predecessors. Its chief features were the miscellaneous collections, Ferns, Roses, hardy herbaceous plants, and dinner-table decorations. Fruit and vegetables, of which there were none, were sadly missed, as were also the numbers of distinguished horticulturists which such displays bring together. The evening fête was a brilliant affair; but the fear of subjecting valuable plants to the influence of so much gaslight doubtless kept away many collections that otherwise would have been present.

Stove and Greenhouse Plants, &c.—Exhibitions of these were limited, and the specimens small. Mr. B. S. Williams showed a good half dozen consisting of *Acrides odoratum majus*, *Allamanda grandiflora*, *Erica Aitoni superba*, *Anthurium Scherzerianum*, *Ixora Colei*, and *Cypripedium barbatum*. Mr. J. Wheeler and Mr. G. Wheeler also exhibited successfully in this class, and the latter showed some plants with sweet scented flowers. For a miscellaneous collection, arranged for effect, Mr. J. Bester, Pine Apple Nurseries, was first with a fine display of *Rhopals*, *Brownias*, *Dracenas*, *Yucas*, *Musas*, *Dasyliorions*, *Fuchsias*, and Ferns, in front of which were a magnificent specimen of *Kalosanthes coccinea* and various small flowering plants. Mr. J. Aldous, Gloucester Road, was second; and Mr. G. Wheeler, Regent's Park, third. Mr. B. S. Williams contributed a very fine group, in which were various kinds of Orchids, Palms, Ferns, Agaves, Heaths, and Cycads; also several of the newer species of stove and greenhouse plants. Messrs. Carter & Co. furnished several nice dwarf forms of bedding *Lobelias*, and Mr. Croucher a group of Agaves. Mr. C. Turner showed a collection of *Carnation* and *Picotee* blooms, and Messrs. Rollisson & Son had an extensive group of very fine stove and greenhouse plants, Ferns, Palms, and hardy herbaceous plants.

Fine Foliaged Plants.—In the class of six fine foliaged plants Mr. Wm. Bull was first with a grand specimen of *Cycas revoluta*, a plant of *Encephalartos Jamesonii* with a trunk 3 feet high and 10 inches through, surmounted by a fine crown of fronds, *Latania Barbonica*, *Dracena lineata*, and a pair of tree Ferns; Mr. G. Wheeler was second with good specimens of *Lomara gibba*, and others, and Mr. J. Wheeler, Stamford Hill, third. Mr. G. Wheeler was first in the class of a dozen Cannas, and Messrs. E. G. Henderson and Son, second. The specimens in these collections were large and beautiful in colour, which varied from bright green to bronze green or copper. Amongst them were *Schubertii*, *rubra superbissima*, *Oriflamme*, *Prémices de Nice*, *gigantea major*, and *Annæi discolor*. For *Caladiums* Mr. Jael, Regent's Park, was first with large specimens of *Houlettii*, *Chantinnii*, *Pœcile*, *Wightii*, *Prince Albert Edward*, and *Duc Adolphe de Nassau*; M. Ritchie, Frognaal, Hampstead, was second; and Mr. G. Wheeler third. In the class of four *Dracenas* Mr. Wm. Bull was first with fine plants of *grandis*, a robust growing dark-leaved new sort; *Chelsonii*, another dark-leaved kind; *Shepherdii*, a variety with broad green leaves edged with red; and the green and white-leaved *Reginæ*; Mr. Bester was second with *excelsa*, *Mooreana*, *Nigro-rubra*, and *Reginæ*; and Messrs. Carter and Co. were third. For a group of coloured-leaved *Coleus* Mr. Jael was first with plants chiefly of the golden-edged kinds.

Palms and Ferns.—The Palms, which were of good useful kinds, formed one of the best features of the show. Mr. Bull, of Chelsea, was first with half a dozen, consisting of *Areca lutescens*, *rubra*, and *sapida*; *Dæmonorops melanochætus*, *Seaforthia elegans*, and *Hyophorbe Ver-*

schaffeltii. Mr. Croucher, gardener to T. J. Peacock, Esq., was second, with equally good, but smaller, plants; and Mr. G. Wheeler was third. Hardy Ferns were fresh and beautiful, and many of them nicely tasselled or crested. Messrs. Ivory and Sons were first in this class, Mr. James, Isleworth, second, and Mr. G. Wheeler third; the kinds exhibited being principally varieties of Lady Fern. In the nurserymen's class of six exotic Ferns, Mr. B. S. Williams was the only successful exhibitor; and in the class of a pair of tree Ferns Mr. Bester, Pine Apple nurseries, was first, Mr. G. Wheeler second, and Mr. T. Farrow third, each having nice couples of *Dicksonia antarctica*.

Hardy Plants.—Specimen herbaceous plants were remarkably well grown and flowered. Those from Mr. Parker, of Tooting, which were first, consisted of *Delphinium Mahama*, violet blue; *D. magnificum*, intense blue; *Lilium croceum*, with nine fine flower-spikes; *Orchis foliosa*, with seven flower-spikes; *Stenactis speciosa*, with its Aster-like flowers; *Oenothera venusta* and *Fraseri*, both yellow-flowered showy plants, not unlike one another; *Campanula coronata* and *C. carpatia*, *Spiraea Filipendula*, *Erigeron glaucus*, and a red double-flowered *Pyrethrum*. Mr. Ware, of Tottenham, was second with a somewhat similar group; and, in addition to that, he exhibited a large miscellaneous group of *Penstemon*s, also single and double-flowered *Delphiniums*, and a basket of bedding *Violas*, some stands of cut blooms of *Carnations* and *Picotees*, and a stand of twenty-four beautiful trusses of herbaceous plants, to which a second prize was awarded. In the class of twenty-four trusses of blooms of hardy plants, Mr. Parker was first with perhaps the finest and most varied group ever exhibited. It comprised trusses of *Lilium croceum* and fulgens *Sappho*, *Delphinium Bella Donna* and *Hendersonii*, *Gloxinia*-flowered white Foxglove, *Penstemon Jeffreyanus*, *Epilobium angustifolium album*, *Centranthus ruber* fl. albo, *Hypericum calycinum*, *Veronica amethystina*, *Catananche cœrulea bicolor*, *Geranium sylvaticum* fl. pl., *Pœonia Belle Donaiseima*, *Gillardia aristata*, *Centaurea macrocephala*, *Hesperis matronalis* fl. pl., *Rudbeckia Californica*, *Spiraea Filipendula* fl. pl., *Coreopsis lanceolata*, *Coronilla rosea*, *Dianthus hybridus* John Bull, and the red and white *Lathyrus latifolius*. For a group of *Lilies* Mr. Bull was first, with two varieties of *Lilium auratum*, *L. superbiens* pyramidale, longifolium, three varieties of *Thunbergianum*, *Crocus*, &c. Mr. Ware was second, with somewhat similar plants; and Mr. C. Turner third, with several examples of *L. auratum*. Messrs. Lane and Son exhibited some very pretty evergreen shrubs and ornamental Conifers.

Roses.—These, as a whole, were scarcely so bright or beautiful as usual, the late heavy rains having somewhat damaged the blooms. Conspicuous among dark crimson were Horace Vernet, S. Reynolds Hole, Xavier Olibo, Louis Van Houtte, Charles Lefebvre, Pierre Notting, and Thomas Louvet; amongst bright red kinds Richard Wallace, Senateur Vaisse, Leopold the First, Alfred Colomb, Etienne Levet, Camille Bernardin, and Marie Rady where the best, while prominent amongst pink whitish-coloured varieties were *Souvenir d'un Ami*, *Marguerite de St. Amand*, Miss Ingram, La France, and Baroness Rothschild; yellows embraced *Maréchal Niel*, *Gloire de Dijon*, *Celine Forestier*, and *Madame Margottin*. Messrs. Paul & Son, Cheshunt; Mr. Turner, Slough; Mr. Cant, and Mr. Webb, were the successful exhibitors among nurserymen. Mr. Farrow, Mr. W. Ingle, Mr. J. Skinner, and Mr. Hollingworth occupied the same position in the amateur's class.

Pelargoniums and Fuchsias.—Among *Pelargoniums* there were some good tricolours and other kinds belonging to that section, and a very nice collection of show sorts were furnished by Mr. C. Turner, of Slough. For half a dozen zonals Mr. Burley, Brentwood, Essex, was first, with finely-bloomed plants of *Prince Bismarck*, deep crimson, large truss; *Cremona*, *Etna*, *Valiant*, *Paradise Beauty*, and a pink flowered sort. Mr. Weston was second, and Mr. G. Wheeler third. Mr. Wm. Paul, of Waltham Cross, exhibited a very fine collection of zonal *Pelargoniums*, remarkable for the size of their trusses and the brightness of their colours. For a dozen tricolour kinds, Mr. J. Pestrige, Uxbridge, was first, with good plants, having wonderfully brilliant leaves, of Mrs. Turner, Mrs. Rousby, Florence, Sophia Cusack, Imperatrice Eugénie, Mrs. Headley, Miss Burdett Coutts, Lass o' Gowrie, Lady Cullum, Charming Bride, and Caroline Longfield. Mr. J. Wright was second, and Mr. Burley third. And in the class of six zonals Mr. R. Watson was first, Mr. Chancellor second, and Mr. Goddard third. *Fuchsias* were chiefly of a pyramidal form, large, not too stiffly trained, and well flowered. In the class of six, Mr. Walker, Gunnersbury House, Acton, was first, with *Reine Blanche*, *Conspicua*, Mrs. Marshall, *Rose of Castile*, *Puritani*, and *Souvenir de Chiswick*; Mr. J. Weston, Clapham Park, was second; and Mr. J. Wright third.

Plants for Table Decoration.—These were from 18 inches to 2½ inches in height, airy and graceful in appearance. Mr. Bull was first with *Dæmonorops palembanicus* and plumosus, *Hyophorbe Verschaffeltii*, *Curculigo recurvata variegata*, *Pandanus Veitchii*, and *Croton Weismanni*; Mr. B. S. Williams, and Mr. Bester were equal second, and Messrs. E. G. Henderson and Son third. Other groups consisted of *Palms*, *Ferns*, *Dracœnas*, *Rhopalas*, and similar plants.

Dinner-table Decorations, Bouquets, &c.—These were substituted this year for exhibitions of fruit and vegetables; and, though some of them were very pretty, they exhibited no improvement on those shown at previous metropolitan shows. Table bouquets of cut flowers, not tied, were chiefly arranged in little March stands, and some of them were very pretty; and hand or bridal bouquets presented no improvement whatever on those every day exhibited for sale in shop windows. Miss Blair, Miss Harris, Mrs. Soder, Mrs. Gardiner, Miss Hyder, Mr. Buster, Mr. Brittain, and Mr. Mortlock were the most successful exhibitors in these classes. Messrs. Dick Radclyffe and Co. showed some nice

window decorations. The same firm likewise exhibited a floral fire-screen; a large rustic vase, furnished with suitable plants; and a suspended ornamental basket, suitable for a conservatory. Mr. Bester also furnished a pretty floral window-screen. For a hanging suspended basket, Mr. Jeal was first with a wire basket, in which the Stag's-horn Fern grew around the sides and bottom, through the meshes of the wire, and a plant of *Pteris longifolia* occupied the centre. Miss Williams was second. For rustic baskets set on pedestals, and in similar positions, Mr. Cole, of Ealing, was first, Mr. Croucher second, Miss Williams and Messrs. Aldous equal third, all having very tastefully-furnished stands or vases.

Certificates of Merit—These were awarded to the following:—

Ilcagnus sp. (Veitch), a very ornamental shrub, bearing a profusion of red berries.
Agave perbella (Croucher), a medium-sized, strong-growing sort, with formidable hooked spikes.
Agave Cordoroyii (Croucher), a strong growing strap-leaved sort, with small brown spines.
Agave Verschaffeltii variegata (Croucher), a pretty little plant, with yellow stripes along the centre of the leaves.
Lilium Krameri (Carter), a beautiful Lily, with pale blush large flowers and narrow leaves.
Campylobotrys Ghiesbreghtii variegata (Carter), a very beautiful form of the common one, broadly diffused with cream colour.
Phajus Marshalliz (Williams), a beautiful Orchid, bearing terminal flower-spikes of pure white flowers with a lemon-coloured tip.
Acantholium venustum (Ware), a free blooming plant, with rose-coloured flowers and stiff narrow glaucous leaves.
Corythogyne spathulata (Ware), a little hardy herbaceous plant, with glaucous leaves and mauve Aster-like flowers.
Lobelia pumila fl. pl. (Dixon), a double form of the ordinary one—very attractive and free-flowering.

Stamford Horticultural Society.—This Society held its annual Show on Tuesday last, and it was in every way a great success. In the class of twelve show and greenhouse plants, Mr. J. Cypher, nurseryman, Cheltenham, was first; Mr. Parker, nurseryman, Rugby, and Mr. J. House, the Nurseries, Peterborough, were equal second. Ferns were well represented; and Messrs. Paul and Son, of Cheshunt, showed some nice cut Roses. Fruits and Vegetables were good, but scarce. Bouquets and table decorations were somewhat inferior to those that were shown last year. Cottagers' productions were excellent.

Window Gardening.—The Westminster Flower Show of Window Plants, cultivated by the poor in St. Margaret's and St. John's, was held on Tuesday last, in College Garden, under the direction of Lady Augusta Stanley, who for some years has been the means of bringing the highest and lowest of society in this district face to face through their equal care of flowers. The working men and women—the term in this district meaning generally the labouring and not the artisan classes—formed the first class, the children in the local schools formed the second, and the inmates or sometime inmates of the local workhouses and Westminster Hospital made the third. The prizes were distributed in the evening by Lord Shaftesbury, who made a happy speech on the occasion. Cheers were at the end given for Lady Augusta, for the Dean, and for the chairman.

LAW NOTE.

Cauliflower Seed.—We learn from the *Gardener's Record* that an Irish market-gardener has recovered damages from an eminent Dublin seed firm for the loss of his Cauliflower crop, arising from a supply of bad seed. In the course of the trial, it transpired that the plaintiff ordered some Early London Cauliflower seed, and was supplied with seed of that variety, which had been saved in Holland. The jury, however, considered him entitled to a verdict, because he had not been supplied with seed saved in or about London. The present state of the law in these matters is by no means satisfactory, and some alteration is required to protect seedsmen from the very questionable legal proceedings to which such a precedent may render them liable.

COVENT GARDEN MARKET.

JULY 11TH.

Homegrown vegetables are good and plentiful, and French Beans, and saladings are still supplied in large quantities from the continent. Bush-fruits are coming in abundantly, and of Cherries there is a good supply. Of Grapes, there is still a quantity of last year's produce in the market. Several thousands of West Indian Pines were sold by auction last week, and another large consignment of them is announced.

Prices of Fruits.—Apples, per doz., 6d.; Apricots, 2s. to 4s. per doz.; Cherries, per box, 1s. to 2s.; Gooseberries, per quart, 3d. to 6d.; Grapes, hot-house, per lb., 3s. to 6s. for black, 6s. to 12s. for Muscats; Lemons, per 100, 8s. to 14s.; Melons, each, 4s. to 8s.; Oranges, per 100, 10s. to 16s.; Peaches, per doz., 18s. to 36s.; Pine-Apples, per lb., 3s. to 6s.; Strawberries, per lb., 1s. to 3s.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 4s. to 12s.; Beans, Kidney, per 100, 1s. 6d. to 2s. 6d.; Beet Red, per doz., 1s. to 3s.; Cabbage, per doz., 1s. 6d. to 2s.; Carrots, per bunch, young, 1s., old do., 8d.; Cauliflower, spring, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 4s.; Cucumbers, each, 4d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 6d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 8s. to 12s.; button, per quart, 1s.; Parsley, per doz. bunches, 6s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 9d. to 1s. 6d.; Potatoes, new, per lb., 2d. to 4d.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Scorzoner, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, old, per bunch, 9d., young do. 1s.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

NOTICE.

Many correspondents send questions to "THE GARDEN" without giving their name and address, or even any clue to the district from which they write. We wish it to be understood that no communication can be taken notice of if unaccompanied by the full name and address of the writer, not necessarily for publication, in cases in which it might be desirable to publish the communication. Many queries of no interest to the readers of "THE GARDEN," and which we desire to answer by post, now lie at our office unanswered, owing to the writers not having observed the above rule.

BELL-FLOWERS.

(CAMPANULAS.)

JUST now, when many of the Bell-flowers are in profuse bloom in mountain pastures, fields, and gardens, is a suitable time to call attention to their great merit as garden plants. For shrubberies or for herbaceous borders, for isolated beds in the flower garden, for the wild garden, or for suitable positions on well-constructed rock-work, few plants are more suitable than Campanulas, few more easily grown, or more strikingly effective in summer and autumn. Many of them also make useful pot plants for indoor decoration, and if sheltered during stormy weather in a cool frame under a temporary covering of canvas or tiffany, they will develop themselves better and look fresher than when fully exposed in borders. When wanted for pot culture, divide the clumps in spring and pot the divisions, separately, in a good, fresh, well-drained compost of fibrous loam, leaf-mould, and coarse grit or sand. Many of the species may, however, be readily propagated by means of seed sown in pans of light sandy soil. Bell-flowers vary much in habit, some bearing long spikes of purple, blue, or white flowers, from 2 to 6 feet in height, rivalling the Foxglove in dignity and stateliness; others forming dwarf dense patches but a few inches high, and bearing their flowers solitary, or one or two together, on short stalks an inch or two above a carpet of fresh foliage; while at least one or two species are of creeping or scandent habit. The genus consists of about two hundred species, nearly half that number being cultivated in, or indigenous to, this country. One of the prettiest and commonest among these Bell-flowers is the Harebell, properly so called, or Blue Bell of Scotland, a species common in northern localities in Britain, and one which bears elegant blue or white flowers on slender wiry stems about a foot high. This species makes an effective pot plant, and one or two varieties of it are largely grown for Covent Garden Market, where they may now be seen. Two other native species—*C. latifolia* and *C. Trachelium*—make stately and effective border plants, growing, as they do, from 2 to 6 feet in height. *C. pyramidalis* is a tall and strikingly effective plant for the back of an herbaceous border, or even as a decorative plant in pots. It thrives best in a shaded position, and bears large blue or white flowers on stems 5 or 6 feet high. It lasts from six to eight weeks in flower, and is sometimes grown in country districts under the *soubriquet* of the "Chimney Campanula." It is now largely grown in Holland, but rarely met with in cottage windows in this country. *C. fragilis*, *C. hederacea*, and one or two other dwarf or procumbent species form elegant plants for window baskets or brackets. The following is a list of some of the best species in cultivation:—

AUTUMN CAMPANULA (*Platycodon autumnale*).—This is a strikingly handsome perennial species introduced from China, and bearing vivid blue flowers, which look as if varnished on the outside. It grows from 18 to 20 inches high, and sports into three or four distinct varieties, having single and double white, and double blue or lilac flowers. In habit it somewhat resembles *C. grandiflora*, but is distinguished by its more slender-

branched, pyramidal habit, its branches being leafy to the top. A fine plant for the mixed or herbaceous border, planted in warm sandy soil, in a sheltered position.

BEARDED ONE-LEAVED CAMPANULA (*C. barbata*).—This is a pretty summer-flowering species introduced from Switzerland nearly a hundred years ago, and still cultivated in gardens. Stem, often one-leaved, 12 to 18 inches high, few-flowered; flowers, blue or white, drooping all on one side of the stem; outside they are smooth, but the inside is bearded with long white hairs.

TUFTED CAMPANULA (*C. cæspitosa*).—This is one of the prettiest little species we have, bearing drooping blue or white flowers, on slender wiry stems, 4 to 6 inches high. It makes an effective pot plant, blooming in June and July. It is, doubtless, a dwarf continental form of our British *C. rotundifolia* or Scottish Blue Bells. Found on the mountains of Central Europe.

CARPATHIAN CAMPANULA (*C. carpatica*).—A dwarf but effective kind, introduced into our gardens a century ago from the Carpathian Alps. Its large and handsome blue flowers are arranged in loose panicles, on stalks 12 to 15 inches high. It sports into two distinct varieties, one having pure white flowers (*C. c. alba*), the other light blue and white (*C. c. bicolor*). It may be easily naturalised in any good garden soil, and forms a distinct plant in the herbaceous border or rock garden. Flowers in June and July.

SLENDER CAMPANULA (*C. fragilis*).—Another dwarf free-blooming species from the South of Italy, well adapted for culture on rockwork, or old ruins in light, warm, well drained soils. It bears loose clusters of pale blue, broadly bell-shaped flowers, and makes a nice pot or basket plant, flowering in July. *C. fragilis hirsuta* is a variety of this covered with long whitish hairs.

GREAT BELL-FLOWER (*C. grandis*).—A very distinct early summer-flowering variety having a simple furrowed stem, 1 to 2 feet high. Flowers alternate, pale violet-blue, broadly bell-shaped in form, with large pointed segments. It is easily propagated, either by division or from seed, and is well adapted for herbaceous borders or margins of shrubberies. Siberia and Asia Minor.

IVY HAREBELL (*C. hederacea*).—A small and very graceful species, with slender creeping branchlets, bearing faint bluish-purple flowers on slender stalks, nearly erect when fully open, though drooping when in bud. In a moist position in either rockery or hardy Fernery, or as a basket plant, this is effective. It is propagated by division, and requires an abundant supply of moisture when growing. Britain (western counties), by the margins of streams; also in Southern Europe and America.

BROAD-LEAVED CAMPANULA (*C. latifolia*).—A tall-growing and effective native species, growing as high as *C. pyramidalis*, and bearing axillary blue flowers in a leafy raceme. There is also a white-flowered variety. By the margins of woodland walks, at the back of the herbaceous border, or in the wild garden, this forms a stately plant of great beauty. Native of Britain, Europe, and Central Asia, flowering in summer.

WALL BELL-FLOWER (*C. muralis*).—A distinct species, found on old walls in Dalmatia, and admirably adapted for naturalising in like positions in our rock gardens. It is seen to best advantage when spreading, like Ivy, up the face of rockwork. It is propagated freely from seed, or by division, and blooms profusely during the summer months, bearing pale violet-blue flowers in racemes.

LONG-FLOWERED HAREBELL (*C. nobilis*).—A fine large flowered species, growing 18 inches to 2 feet in height, and bearing large reddish or white flowers, crowded towards the ends of the branchlets. Flowers drooping, bell-shaped, smooth outside and hairy within. It is a native of China, and a fine subject for planting by the margins of woodland walks, or in the herbaceous border.

CHIMNEY CAMPANULA (*C. pyramidalis*).—This is easily propagated either by means of seed or division, and when well grown it is one of the finest of hardy or half-hardy decorative plants. It is admirably adapted for the decoration of apartments during the summer months. It grows freely in a compost of turfy loam, well rotted manure, and coarse grit or sand, requiring an abundant supply of water at the root. It also

does well planted out in the herbaceous or shrubby border. A variety of this plant, of which Mr. Barnes gives a full account in another column, bears white flowers. It is a native of Dalmatia.

RAINER'S HAREBELL (*C. Raineri*).—A rare and pretty species from the Alps of Southern Europe, growing only 3 or 4 inches high, and bearing erect, funnel-shaped flowers, one to three on each branch. Grows well planted on warm ledges of the rock garden in sandy soil, forming an effective clump when well established.

TRUE HAREBELL (*C. rotundifolia*).—A well-known native plant, well worth cultivating for the pretty effect produced by its numerous blue flowers. Clumps of this look very nice established on the ledges of the rock garden, or on warm sandy shelving banks and borders, where it blooms freely throughout the summer.

SHOWY HAREBELL (*C. speciosa*).—This is similar in general appearance to *C. caespitosa*, but has larger flowers, and varies in height from 1 to 2 feet. Flowers deep blue, purple or rosy-purple in large clustered heads, produced during the summer months. It is a native of Siberia, and soon establishes itself from seed sown in ordinary soil.

NETTLE-LEAVED CAMPANULA (*C. Trachelium*).—A vigorous erect grower, 3 to 4 feet high, with coarse Nettle-like leaves and tall leafy spikes of purple-violet flowers. There are three varieties of this plant in cultivation, viz., Double White, Single White, and Double Purple, all effective for shrubby borders, or walks in the wild garden. It is now flowering freely in several of the public gardens around London, and is readily multiplied from seed.

VASE HAREBELL (*C. turbinata*).—This very dwarf-growing species grows from 3 to 6 inches high, and bears large and handsome flowers of a deep purple colour, and nearly 2 inches across. It is an effective species for pot culture, and admirably suited for naturalisation on warm banks, slopes, and sheltered ledges of the rock garden. It is readily multiplied by division, or from seed sown in sandy earth.

WANNER'S HAREBELL (*C. Wanneri*).—A handsome and distinct species, 6 inches to a foot high, producing its showy, drooping, bell-shaped flowers in May and June. It is at present rare, but extremely effective, bearing numerous dark blue flowers. It is a native of the Banat Alps, may be propagated either by division or from seed, and does well in a warm sheltered border or ledge in the rock garden.

In addition to the above, numerous other kinds are to be met with in cultivation that are worthy of a position in most collections. Prominent among these may be enumerated such sorts as the following, viz., *C. glomerata*, which bears showy flowers of a deep blue or purplish colour in terminal clusters nearly throughout the summer. The double blue, and double and single white forms of this species are also very ornamental; The peach-leaved Bell-flower (*C. persicifolia*), is a very attractive plant, of which the double-white and double-blue kinds are perhaps the best; *C. pulla*, a dwarf variety with deep purple flowers. The white variety of *C. latifolia* makes a good companion to the common form. B.

ROSE GROWING AT BATH.

YOUR correspondent (p. 21) is right when he says that Bath is pre-eminently a Rose-growing place. Roses are certainly grown largely here, both in private gardens and cemeteries, and they reach as near perfection as possible. Your correspondent should visit St. Michael's Cemetery, where all the best Roses in cultivation are grown, some of them measuring no less than 23 inches in circumference. Such blooms would amaze even Mr. Hole himself. About six years ago I commenced to raise Roses from seed; when I saved my first seed I was told by knowing people that I should never succeed in raising any good Roses; the result, however, is that instead of having a lot of bad seedlings I have a splendid lot of good flowers. On the 19th of March this year I sowed my seed, and I have now a nice bed of young plants, most of which are in bloom, and a splendid lot they are. I have had a great many Rose growers to see them, and they all admit that they are splendid. The great Rose show here was too late for me by fourteen days, or I should have shown some of my seedlings on that occasion.

St. Michael's Cemetery, Bath.

WILLIAM ROLES.

NOTES OF THE WEEK.

— WE understand that Mr. J. S. Davenport has been selected from amongst 395 candidates to fill the office of Assistant Secretary to the Royal Horticultural Society, lately made vacant by the resignation of Mr. Richards.

— DURING the past week several van loads of sub-tropical plants such as Cycads, Palms, Caladiums, Musas, and India-rubbers (*Ficus*) have been planted in Hyde Park for the summer season. *Musa Ensete* has an effective appearance on the three-cornered grass plot just inside Albert Gate. The bedding plants are improving and will soon be at their best.

— THERE is now a fine belt of *Yuccas*, some 30 or 40 yards in length, in full flower in Mr. Rivers' nursery, at Sawbridgeworth, and the effect which they produce is striking in the extreme. The kinds are *Y. recurva*, *Y. glauca*, *Y. flaccida*, and one or two others. There is also a pair of nice specimens on the lawn, just opening a profusion of creamy wax-like flowers.

— WE hear that a company is being formed for the purchase and working in all its branches, of Cowan's patent for the heating of horticultural and other buildings, "without cost of fuel."

— WE learn by circular that the Lawson Seed Company is now fully organised, and that the required capital (£50,000) has been fully subscribed and called up. Under the board of directors, aided by efficient management, this company is now in a position to maintain the prestige of the well-known name which it bears. It has acquired all the extensive nurseries and seed warehouses of the old firm, both in Edinburgh and London.

— THE Abbé Morlon, in a letter to the *Revue Horticole* of the 16th instant, states that he has succeeded in raising some Artichokes of extraordinary size, the largest of which produced a head weighing nearly 3 pounds, and measuring 1 foot across. The Abbé, in his letter, gives a detailed account of the raising and culture of this "phenomenal" variety, which he has named "L'Artichaut de Beaulieu," after his property of Beaulieu (Corrèze).

— FAVOURABLE accounts reach us respecting the fruit crops. Small fruits and Cherries are very abundant and of average quality. In some of the low-lying districts fruit trees have suffered severely through late spring frosts. In some cases, however, the damage is confined within narrow limits. At Sawbridgeworth, one side of a hollow in the nursery is planted with Rivers' Early Prolific Plum, these suffered severely along with some of the choicer Pears, while the same kinds in higher positions, a few yards off, are bearing enormous crops, so much so that the branches are propped to prevent the weight of fruit from breaking them down. Walnuts appear to be scarce, but from most other fruit trees we may confidently expect full crops.

— MR. W. CARRUTHERS, says *Nature*, has just issued his official report for 1872, of the Department of Botany in the British Museum. The additions to the herbarium during the year are spoken of as large and important, rendering more and more pressing the necessity of increasing accommodation for the arranged herbaria. The species included under several of the natural Orders, both in the general and in the British herbarium, have been entirely re-arranged during the year, and much use has been made of the herbarium by botanists preparing monographs. Numerous interesting additions have also been made to the structural series, both in the fruit, the fossil, and the general collection.

— THE promoters of the Royal Horticultural Society's Exhibition at Bath have every reason to be satisfied with the results of the undertaking. Although the number of visitors was not so large as at Birmingham last year, it will be found that, in a financial point of view, this year's show is quite as successful, if not more so, than its predecessor. The admission on the first four days was as follows:—Tuesday, 2,530, sum taken at the gates, £69 17s. 6d.; Wednesday, 6,205, £509 16s. 11d.; Thursday, 37,356, £867 16s. 2d.; Friday, 11,000, £408 8s. 4d. On Saturday the admission fee was sixpence, and about 7,000 persons visited the show, the receipt at the gates being £235 18s. 6d. The aggregate attendance was about 53,000, and the total receipts at the gates £2,107.

A DISCOVERY has been made by a French firm of paper manufacturers which seems likely to interest English Hop growers. At the last general assembly of French paper-makers, MM. Jourdeuil, Parizot, and Gusseo submitted some samples of a new textile fabric, namely, the sheath of the Hop stalk. By removing this outer skin, and subjecting it to a certain chemical process, a textile substance possessing the qualities which make rags so valuable in paper-making—length, suppleness, and delicacy of texture, has been produced. The invention is patented, and seems one that should be noticed in a country which requires much paper and grows Hops in abundance, and where it may do something to compensate for the proverbially precarious nature of the Hop harvest.

THE FLOWER GARDEN.

THE TWIN-FLOWER.

(LINNÆA BOREALIS.)

THE name of Linnæus, the great master of botany, is borne by a plant which, though humble in size, is one of great delicacy and beauty. It is a little creeping evergreen plant, about twice as large as is represented in the engraving. It belongs to the Honeysuckle family, and as each slender, upright stalk bears two flowers, it has received the common name of Twin-flower. The flowers are white, often tinged with pink or purple, delicately fragrant, and droop with a modest air that is very charming. It is usually found in moist woods, where it forms a dense carpet. It is an excellent plant for a shady rock-work, and when once established grows rapidly. The plant was discovered by Linnæus in 1732, and his friend Gronovius bestowed on it the name of the discoverer. In the well-known portrait of Linnæus, he is represented in his travelling suit with a cluster of the Twin-flower in his hand. The Linnæa is a peculiarly northern plant, as its specific name, borealis, would indicate; and is found in both continents. In Northern and Central Europe, it is found in woods,

spring I found my *Narcissi* a month later than last year, and my earliest *Lilies* from ten days to a fortnight. If your readers will date back one week from the day of publication, they will then generally know what *Lilies* bloomed the preceding week; but in the present instance they will have to date back a fortnight, as I was not able to complete my paper in time for the last issue.

A day or two since I was charmed with an array of that loveliest of all *Lilies*—*Lilium japonicum*, and shall therefore commence my present list with it.

31. *L. japonicum* (Brownii), delicately fragrant; the three inner segments ivory-white; points gracefully rolled back, with a raised bar of crimson running down the back of each petal, and on either side of it a tinge of green; the three outer segments white inside, crimson outside, and, when rolled back, the crimson shows through the ivory-like substance of the petals, thus imparting to the flower a rosy glow distinctly margined with pure white. When grown under glass, the flowers are almost white. Last year Mr. G. F. Wilson had the largest and purest white flower of this variety I have ever seen, a result attributable entirely to superior cultivation.

32. *Thunbergianum alternans*, glowing rosy-scarlet, tinged

The Twin-flower (*Linnaea borealis*).

and sometimes, though rarely, in open rocky situations. In Britain it is confined to the Fir woods of some of the eastern counties of Scotland, and, according to Bentham, to a single locality in Northumberland. In America it is very common northward, and is found sparingly as far south as New Jersey and Maryland. Aside from its intrinsic beauty, the plant is a favourite with all who love wild flowers, and more especially with botanists, on account of the illustrious name it bears. It is supposed to be rather difficult to cultivate, but where the soil is moist and light it grows freely in borders. We saw it the other day forming wide-spreading tufts on the margins of some of the masses of shrubs in Mr. Latimer Clarke's charming garden on Sydenham Hill. It is easily grown in beds of peat kept moist, or placed among the Alpine plants in a cold frame, or even on the window sill, on an aspect of the house not too exposed. Our illustration is from the *American Agriculturist*.

LILIES PAST AND PRESENT.

(SECOND EARLY KINDS.)

IN these reports on the different kinds of *Lilies*, I have not added the periods of blooming, as I do not consider this year's flowering to be a fair criterion on that point. In the

with apricot; lower half of petals freely spotted; a very beautiful variety.

33. *Thunbergianum macranthum fulgens*. This I purchased on the continent, under this name. It is a robust kind, growing almost as tall as some of the varieties of *Davuricum* already described, but the flower resembles that of a true *Thunbergianum*, and affords a good illustration of how the red *Lilies* of Japan merge into the red *Lilies* of Europe. Colour tawny crimson, shading down the petals to orange-crimson, and with a pinkish glow at the bottom. The flowers are produced in a compact umbel.

34. *Thunbergianum cupreum*, coppery bronze-scarlet; petals gracefully recurved.

35. *Thunbergianum latimaculatum*, a splendid variety, rich orange-scarlet, flaked with crimson.

36. *Thunbergianum atrosanguineum*, rich blood-crimson, slightly shading off to orange, lower half of petals spotted with black.

37. *Thunbergianum fulgens*, rich crimson, more or less stained with tawny yellow; when fully established a fine showy variety.

38. *Concolor*; scarlet, slightly stained with crimson, lower part of petals spotted with black, anthers scarlet. This is a charming dwarf species from Japan, mostly producing one flower, but sometimes more. Several roots should be grown

in a pot to produce a display. In the conservatory borders it should be grown in clumps.

39. *Candidum*, flowers snow white, with conspicuous yellow anthers; delightfully fragrant. Parkinson speaks of this under the name of *Lilium album*, and states that the poets called it Juno's Lily, so that in his day, as at present, it was the Lily of sentiment. He adds that, this Lily was so common in his time that it might be found in almost every garden. There was, however, another white Lily described by him which we do not appear to have, viz., *Lilium Byzantinum*, a kind which differed from *Candidum*, in being broader in the divisions of the perianth, and in the number of the flowers, which ranged sometimes from 100 to 200 (but ordinarily the plant produced about two dozen flowers), and a stem as broad as the hand. I have never myself noticed fasciated stems amongst the plants of *Lilium candidum*. Have any of your readers?

40. *Candidum maculatum*, white streaked with purple.

41. *Candidum fol. maculatis*. This variety is remarkable for its conspicuous gold-blotched foliage throughout the autumn and winter months. The leaves, however, have a great tendency to become green.

42. *Candidum fol. aureo-marginatis*. Throughout the autumn and winter months the clear gold-margined foliage of this plant is exquisite.

Of the Martagon Lily, Parkinson appears to have had in cultivation a number of varieties, and it is very doubtful if some of them are not now lost. At the head of his list he has set Martagon imperiale sive *Lilium montanum majus*, and describes it thus:—"The Imperial Mountain Lily has diverse circles of green leaves set together at certain distances round about the stalk; the intervening space between the circles bare, and on the top of the stalk three to four score of flowers confusedly set together;" and further on he says, "it hath been sometimes observed to bear many flowers at several spaces on the stem one above the other; the colour of the flowers being a fine delayed purple."

43. Martagon album, pure white; a very handsome Lily. Parkinson mentions a white variety with spots.

44. Martagon Catani.—I am indebted to Mr. Max Leichtlin for this remarkably handsome species, the flowers of which are of a rich glittering crimson-plum colour.

45. Martagon purple.—This variety, which is the most common in this country, has flowers of a somewhat dull purple.

46. *Canadense puberulum*.—This is one of the new North American Lilies. The reflexed part of the segments is orange-scarlet, while the remainder of the flower is a deep yellow, profusely covered with brown spots; a very handsome species, and one which will doubtless be an acquisition for Rhododendron beds, owing to its majestic growth and profusion of richly coloured flowers.

All the Lilies mentioned in this article can be confidently recommended for pot culture.

PETER BARR.

12, King Street, Covent Garden.

CAMPANULA PYRAMIDALIS.

This plant, which is generally better known as the Chimney Campanula, has been, for many years, one of our best and most showy conservatory, window, or fire-place blooming plants for the months of August and September; at the same time it is not cultivated as much as it ought to be, considering its merits. From the years 1818 to 1828 it was cultivated pretty largely by two florists in the neighbourhood of London, and I have never since seen it better cultivated in any place than it was in those days. Its cultivation is simple, easy, and inexpensive, and I will here relate it. There are two varieties, the white and the blue, both grand, late, summer-flowering plants, both requiring the same simple treatment, and both may be kept in full flower from early in July till late in October by placing some of the plants in April in a warm south aspect, and others in a north, shady, cold position. Moreover, several shades of blue may be obtained by shading, placing some plants fully exposed to the sun, and the application of strong clear manure-water.

They may be propagated to any extent in the following

manner. Procure a strong plant; shake it out of the earth in October; break off all the strong roots into about 2 or 3-inch lengths; dibble them into deep boxes, or 10-inch flower-pots, filled with good open rich garden soil (leaving the tops of the roots level with the earth's surface), and place them for the winter in a cold pit-frame or under a greenhouse stage. Prepare in winter a good piece of ground, by well manuring, trenching, ridging, and pulverising it. Lay it down in the end of March or beginning of April; shake out your store plants; which in autumn were bits of roots, but are now nice little plants, mark out your rows two feet apart, and plant carefully, by making holes with a spade or trowel, two feet apart in the row; hoe, scarify, and keep clean all the summer. By the next October they will be very strong plants indeed, and should then be taken up and potted in 8, 10, or 12-inch pots according to their size and strength; place them in turf or cold pits for shelter and protection during the winter. At the same time do not forget to take off one or two of the strongest roots from each plant, put them in their full length, and place them away in a winter store for next year's stock, with their small roots and fibres attached to them. In this way you can get large, clean, healthy, and very strong plants—and such as will produce from seven to fourteen or fifteen strong shoots each—for flowering in succession next year. They may be made to grow to any size or height by training, and watering them copiously with manure-water while in pots, and will cover the end of a large room, passage, or window. I have thus grown them to an extraordinary size and beauty. The white and blue grown together, with their shoots trained and intertwined, produce a very fine effect. Stock roots should never be taken from plants that have flowered, as the plants produced from them are pretty sure to flower spuriously during the next summer in their store-ground, and are not to be depended on. Here I may mention, also, the beautiful little *Campanula Garganica* (a glorious late summer-flowering plant for indoor, outdoor, border, rock-work, &c.) that I so much improved nearly fifty years since. I raised it in several varieties of colour, and grew them with their thousands of flowers on single plants, that were considered truly grand. It is now rarely seen well grown. I may some day give my very simple method of growing it easy and well.

J. B.

Rock Plants in Shade.—What rock plants will grow in shade, under the drip of Laurels, and in a draught through a shrubbery?—E. M. D., *Pineon*. [Primroses, Periwinkles, St. John's Wort, Woodruffe, Musk, Winter Aconite, Anemones, Arum italicum, Betonicas, Campanulas, Dentarias, Epimediums, Strawberries, Fritillarias, Funkias, Galanthus nivalis, G. plicatus, Gaultherias, Geraniums, Geums, Heucheras, Irises, Lamiums, Leucojums, Linnaea, Lysimachias, Mimuluses, Mitchella, Myosotises, Narcissi, Omphalodes verna, Sanguinaria, Saxifraga cordifolia, S. crassifolia, Geum, Squills, Sedum spectabile, Smilacina bifolia, S. stellata, Tradescantia, Trolliuses, Tussocks fragrans, and Violets.]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Gold-netted Honeysuckle (*Lonicera aurea reticulata*).—It may interest some to know that this blossoms as far north as Fifehire. We have a plant of it here now in flower, trained on wires on one of the walls of the mansion, on which its green leaves, prettily netted with gold, have a fine effect.—H. Rose, *The Gardens, Grangemuir, Pittenweem*.

Weeds on Lawns.—Will you kindly tell me how best to eradicate Plantains and other weeds on my lawn.—B. [Slip a narrow but strong and sharp knife through them a little below the crown, and pull them clean out, disturbing the turf as little as possible. By doing this regularly and persisting in it you will get rid of them.]

The Silphium of the Ancients.—The interesting article on Silphium may be made more complete by referring your readers to the words Cyrene and Cyrenaica in Smith's Dictionary of "Ancient Geography." There is a good plate of the coin with the Silphium on it, and references to the classical authors who mention the plant. Can any one help me to the Narthex Assafetida described in the article?—H. N. ELLECOMBE, *Bilton*.

Diseased Rose-leaves.—A few days since I observed a yellow marbled or mottled appearance on the upper surface of the leaves of many of my Roses, while the under side is covered with a powdery matter of a bright orange colour. The leaves so affected are now withering fast. I enclose a few for your inspection. The disease, if it be such, is extending itself rapidly amongst my plants.—J. B. [Your Roses are suffering from a small Fungus (*Puccinia rose*) which attacks the under surface of the leaves. It chiefly makes its appearance on plants growing in dry soils. No cure has yet been found for this disease, but Mr. Rivers recommends, as a preventive, that the Roses should be lifted and replanted every autumn, giving them at the same time plenty of manure, and stirring the soil 3 feet deep.]

THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

ACER SACCHARINUM (THE SUGAR MAPLE).

This forms a tree from 30 to 40 feet high, with a round spreading head, very similar in appearance to that of the



A. saccharinum.—Leaf of a young tree.

Norway Maple. It is a native of North America, from Canada to Pennsylvania, and covers a greater extent of the American



Leaf of an old tree.

soil than any other species of Maple; it flourishes best in a rather damp, alluvial soil, but will not thrive in dry and exposed

situations. It was introduced in 1735. The leaves of the Sugar Maple vary very much in shape; those on old trees are broadly and somewhat bluntly five-lobed, not deeply divided, and nearly entire on the edges, with the three outer lobes much the largest; while those on young trees are deeply and very acutely five-lobed, and sinuately toothed on the edges; they are all cordate at the base, quite smooth on both surfaces, light green above, glaucous and prominently nerved beneath, and on long and rather slender footstalks, frequently tinged with red; and just before they fall off turn to a yellowish-brown colour. Flowers small, yellow, and both hermaphrodite and males, disposed in short, compound, drooping corymbs, on short pilose peduncles, and produced in May. Fruit of keys rather small and smooth, with the wings somewhat diverging. From the sap of this tree the Americans make a large quantity of very good sugar. The sap is obtained by making a hole in the stem of the tree, in an ascending direction, with an auger, and introducing a spout about half an inch into the hole; warm days and frosty nights are most favourable for the plentiful discharge of the sap. The Bird's-eye Maple wood of the cabinet-makers is also the produce of this Maple. The length of the leaf is 7 inches, including the footstalk, which is 3 inches long, and the breadth is 5 inches. The *Acer nigrum* (the Black Sugar-tree or Rock Maple of the Americans) is only a variety of the Sugar Maple, which principally differs in having the leaves downy beneath and of a darker green, and in the tree not attaining to so large a size.

Male and Female Aucubas and their times of Flowering.—In the last number of the *Revue Horticole*, M. Carrière, in reply to the question whether, amongst Aucubas raised from seed, male plants are more numerous than females, or whether, as happens in the case of many monœcious and dioecious plants, the male flowers are developed sooner than the female, states that his own experience is that, amongst several thousands of Aucubas which he has raised from seed—(1.) Those which have flowered are, with few exceptions, male plants; and (2.) That the few female plants which made their appearance, have flowered much (sometimes two, and even three months) later than the male plants. M. Carrière concludes his observations by inquiring whether these peculiarities have been remarked by other cultivators?

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Large Deciduous Cypress at Pain's Hill.—The following is the measurement of a deciduous Cypress at the top of the lake here. Its height is 83 feet; the circumference of the trunk, at 20 feet from the ground is 7 feet 3 inches; at 10 feet from the ground, 8 feet 3 inches; and at 3 feet from the ground, 10 feet. It has no knees that I can find; possibly when the river overflows its banks the deposit of leaves covers these up, whereas trees of the same kind of Cypress on the margin of the lake show them.—T. CLEMENTS, *Pain's Hill, Surrey*.

Propagating the Holly.—As I am desirous of increasing my stock of Hollies, I shall be glad to know how I can best raise them from seed.—AMATEUR. [The Holly may be propagated by seed, budding, grafting, and by cuttings. The seeds of the Holly, like those of the Hawthorn, &c., do not come up the first year, and are, therefore, commonly buried in a little pit in the soil, where they are allowed to remain for a twelvemonth, and are then taken up and sown in beds of finely prepared soil.]

The Best Time for Transplanting Conifers.—Will you kindly tell me what is the best time for transplanting Conifers and large Portugal Laurels. I was unfortunate with many moved in the winter and early spring.—C. W., *Croydon*. [We shall be glad if experienced planters will say a word or two on this matter, as old-fashioned practices in this respect have been much departed from by many modern planters.—ED., THE GARDEN.]

Remarkable Group of Planes.—Close to the Bosphorus stands what is called the Plane tree of Buyukdéré, known also as the Plane tree of Godfrey of Bouillon, who is said to have rested under its shade when leading his army to Jerusalem in 1097. It has the appearance of a single tree, but on close inspection is found to consist of nine trees closely joined together. The circumference of the united trunks is over 133 feet. The height of the group is 195 feet, and the circumference of the spread of the branches is 364 feet. Part of the trunks has been hollowed out by fire, and eight or ten persons can be sheltered in the cavity.

Sea-side Trees.—I have found no trees succeed so well as *Pinus insignis* and the Corsican Pine. I have plants of the latter growing and flourishing where the Sycamore and Beech, twenty years planted, never could even get into respectable bushes. Both Pines also have the advantage that hares and rabbits will not touch them, and the wood of the Corsican Pine is very valuable, while that of the Austrian, another great tree for the sea-side, is worth but little. I have also succeeded in growing the Aleppo Pine (*Pinus halepensis*), from seeds brought from the Isle of St. Marguerite, opposite Cannes, where this Pine grows with its roots down to the salt water, and where it withstands the most terrific sea gales without seeming a bit the worse for them. Those who wish to plant near the sea should plant as follows: *Pinus halepensis*, Corsican Pine, *Pinus insignis*, *Pinus austriaca*, *Picea nobilis*, and *Cupressus macrocarpa*.—A PRACTICAL PLANTER.

PACKING PLANTS IN HOT COUNTRIES.

STRANGE to tell (says "Eos" in the *English Mechanic*), the primitive Hindoo was the first discoverer of the proper *modus operandi* in packing tender cuttings, and to his intuitive simplicity I am heavily indebted for a large portion of the floral treasures I collected and had the pleasure of transmitting during my long sojourn in the East and other quarters. The following is a description of the process:—Having tied your various cuttings up in lots, and all of as nearly the same length as possible, proceed to cut down that very ubiquitous tree, a Banana. Say your cuttings are 18 inches long, you will require a case of 2 feet; you therefore chop off a thick portion of the above length, and next, with your axe, split it lengthways and remove the fleshy bark, set like the coats of an Onion, layer upon layer. Within this case you tightly pack your cutting, securing the two halves of the Banana stems with ties of bark or twine; then you make a stopper for each end of the same substance, and dipping them first in moist clay, drive them in, and cut them off quite even with your box. The package should then be sewn-up in stout wax cloth, bearing the direction, destination, &c. I will now give two satisfactory instances of its merits. A friend at a distance of some hundred miles, who had promised me some choice Chinese Chrysanthemums, was requested by me to pack them as above—the season being very hot. He despatched them by transport waggon, but by some accident the address had been defaced and the package subsided among "lost goods." After several weeks' delay and much correspondence, the same was duly forwarded to me, and I opened the case rather anxiously—but what was my surprise to see the plants all alive, and more than one with newly-formed roots. Again, I was on a tour in the North-west Himalayas, and coming across a superb specimen of the great Climbing Rose in the old garden of a ruined palace, I set to work, and soon packed myself a collection of cuttings thereof in a Banana box; this I carried about with me in all manner of climates and temperatures for about five months. When I descended to the plains of India two cuttings were alive, and I subsequently saw one of these growing in the garden of the friend for whom I carried them. I strongly recommend the importation of this invaluable article from the West Indies. I believe horticulturists will prize it highly, especially the dealers in tender exotics. This pithy porous article is cold as ice, strong and elastic as leather, and moist and juicy as a Cabbage leaf—the great virtues in a plant envelope. I will now give an illustration of another substance I used, under particular circumstances, with similar success. When sojourning in the North-east Himalayas (the Upper Burrampooter region), the humidity of the air may be conceived when I state the annual rainfall may be counted in hundreds of inches (excepting Terra del Fuego, the greatest on the earth). Here I found green Bamboo, for the above reason, vastly superior to Banana; almost equally cool, more capacious, and with far less tendency to become mouldy during a very long river voyage to Calcutta. Such are the dimensions of Bambusa in those remote wildernesses, that milk buckets are constructed of one joint by the native herdsmen. I have since bethought me of imitating the cool porous humidity of these natural plant-cases by substituting a long box of sheet cork, thickly varnished outside with gutta percha and pitch (two parts of the latter to one part of the former), this case to be lined with spongio-piline; succulents to be packed therein in dry charcoal dust; all other plants or cuttings to be previously wrapped in strips of linen moistened with distilled water, and the spongio-piline similarly damped. This answers well for long voyages. The following modes of conveyance to the most distant countries have all been attended with success, but there are obstacles to their general employment.

1. The bundle of cuttings, being packed air-tight and water-tight in sheet india-rubber, is immersed in a ship's water-tank.
2. Packed similarly, they are stowed in a ship's ice-room.
3. Enwrapped in several folds of wax-cloth, and then dipped several times in a liquefied mixture of soap and wax till densely covered, these many coats can be afterwards pressed with the hand into a dense mass.

The beautiful *Lilium giganteum* of the Himalayas was long in being introduced into Europe; the bulbs invariably failed, until Dr. Royle hit upon the soap and wax process. Collodion for healing the points or ends of cuttings is also a modern practice to prevent "bleeding" and exclude air. There is a valuable substance in use throughout the N.W. Himalayan Alps for roofing dwellings and granaries—i.e., Birch bark; this tough pliable product I found far superior to any kind of paper or cloth as a wrapper. The plant collector spreads a quantity of fresh damp moss on one of these sheets, and rolls the whole up tightly, using ties to secure the parcel; his bundles are then stowed into a "kilta," or long basket, carried endways with a strap, on the back of a sturdy mountaineer.

THE INDOOR GARDEN.

HARE'S-FOOT FERNS.

(DAVALLIAS.)

THE old genus *Davallia* is now broken up into various sections by modern pteridologists, but as the name is still familiar in most gardens, we shall adhere to it in this case. Most of the species are natives of tropical or sub-tropical countries, and produce their fronds at intervals along a creeping rhizome which is more or less covered with chaffy scales. Many of the species are valuable decorative Ferns, and useful either for pot culture or for hanging baskets, and ornamental vases in the conservatory or drawing room. Some furnish elegant fronds for cutting, and among others useful for this purpose we may mention *D. pyxidata*, *D. elegans*, *D. dissecta*, *D. bullata*, *D. tenuifolia*, and one or two others. The fronds selected for this purpose should be well developed, and then they will last a long time in water.

These plants grow well in a compost of fibrous peat and sand, to which about one-fifth of fresh turfy loam may be added. The pots should be thoroughly well drained, for though *Davallias*, like most other Ferns, like an abundant supply of water when growing, they speedily show signs of weakness in a sour and stagnant compost. Some of the smaller species, as *D. parvula* and *D. pedata*, may be grown on the trunks of the larger Tree Ferns, and grow very well in such situations if plentifully supplied with water by syringing them over once or twice a day. *D. aculeata* is a curious scandent species, and may be grown as a stove climber. One or two fine species have been added to our collections recently, as the stately *D. Mooreana* and the elegant *D. Tyermanni*. *D. hemiptera* is another pretty little species, introduced by Messrs. Veitch & Sons, of Chelsea. This plant, of which we give an excellent illustration, reminds one of some of the smaller-growing *Lindsæas* in habit and general appearance. We shall here allude briefly to a few of the best *Davallias* in cultivation for general decorative purposes.

D. BULLATA.—A dwarf-growing species from the Malayan Archipelago, bearing light green triangular fronds at intervals along a creeping rhizome, the latter being covered profusely with reddish-brown scales. It is a useful Fern, and soon envelopes the pan or wire basket in which it may be grown with its dense green fronds. Its elegantly cut fronds are valuable for grouping along with choice cut flowers.

D. ELEGANS.—Another creeping species from various parts of tropical Asia, admirably adapted for covering the old dead trunks of Tree Ferns or rock-work in the warm conservatory or Fernery. Its fronds are larger than those of the last species, and of a bright green colour. Both this species and its still more elegant variety *D. dissecta*, are admirably suited for culture in vases or hanging baskets, being of free and vigorous growth.

D. HEMIPTERA.—A pretty little species from the tropics, bearing a profusion of dark green pinnate fronds, which vary from three to twelve inches in length. It grows very freely in a temperate Fernery, and makes a dense and effective plant grown in a shallow pan. Our illustration shows its habit and general characteristics.

D. MOOREANA.—One of the most noble species in cultivation, producing gracefully curved fronds, 2 to 4 feet high, nearly as broad at the base, and of a delicate pale green colour. The large fronds are elegantly cut into numerous small blunt segments, and are remarkable for the prominent manner in which the sori show in a dotted manner on the upper surface. It will make a grand exhibition plant, and grows vigorously in an intermediate temperature.

D. PARVULA.—This is a very dwarf species, of Liliputian proportions, but useful for growing on a block of wood, or on the stem of a tree Fern. Its small, dark green, finely-cut fronds are about an inch long, and nearly as broad at the base, produced at short intervals along a slender rhizome. This little plant is a native of Borneo, whence it was sent to Messrs. Veitch by their enthusiastic collector, Mr. Thomas Lobb.

D. PENTAPHYLLA.—This is rather an uncommon species in collections, and very distinct, somewhat resembling a *Pteris* in the shape of its thick fronds, which are of a dark and shining green colour, generally divided into fine segments,

hence its specific name. It makes an effective plant grown in a broad shallow pan, well elevated on a compost of rough fibrous peat and sand. It is a native of Malaga, and requires stove treatment.

D. PIXIDATA.—A strong-growing and very ornate species that does well in a moderate temperature. Its large triangular fronds are borne on dark brown rhizomes, which affect an erect habit. Its young fronds are of a charming light green colour, while the older ones, when thoroughly hardened, keep a long time in water after being cut. When well grown this plant makes an effective specimen, especially in spring and early summer. It is a native of Australia.

D. TENUIFOLIA.—A slender-growing species of elegant habit, forming beautiful specimens when well grown. Its fronds are elegantly cut into a multitude of light green segments, and droop over at the points in the most graceful manner possible. Its variety *stricta* is rather more erect in habit, and both make fine exhibition or decorative plants grown in pots, in a stove or intermediate temperature. Native of the tropics.

F. W. B.

MASDEVALLIAS.

THESE rank amongst the finest of all Orchids, and they are more easily grown than many less important members of the great family to which they belong. They are plants of dwarf habit, and have bright green leaves, all more or less succulent. The tallest of them does not grow beyond a foot high, and they are as free in growth as a plant of that stature can possibly be. Each shoot sends forth an eye, and in cases in which great luxuriance is present, a couple of eyes which grow on into leaves, become of a darker green as they come to maturity; and when ripe, so to speak, the small pseudo-bulbs send forth flower peduncles. These peduncles rise clear above the foliage, and yield one, and, in some cases, as in *M. towarensis*, from three to five flowers.

Harryana.—This is the most ornamental, the easiest grown, and the freest flowerer of the genus. The flowers, too, are of greater size than those of its compeers. It was sent home from the country in which *Veitchiana* was found, and being somewhat similar to that kind in general appearance, in leaf and foot-stalk, it was considered to be *Veitchiana*. When it came into flower, however, it was found to be a most distinct and beautiful species, which Prof. Reichenbach named *Harryana*, in honour of its discoverer, Mr. Harry James Veitch, of the Royal Exotic Nursery, Chelsea. It is as sportive as a *Pelargonium*, varying greatly in colour between an

intense purple and a blood-like crimson. Nothing we have seen in flowers has so much pleased us as this *Masdevallia*.

Veitchiana.—This was the greatest prize among high-coloured *Masdevallias* until the advent of *Harryana*. Even now it takes first rank as a flower, only it is not so free in blooming, and it is yet much scarcer throughout the country than *Harryana*, notwithstanding that it has been much longer known. It is one of the most distinct of the race to which it belongs, and its formation is more after the rare elephanticeps than other cognate species. Like the others, its petaline segments are small and concealed within the orifice of the tube. The sepaline segments are connate, but the dorsal sepal is much larger here than in either *M. coccinea*, *M. Lindeni*, or *Harryana*.

It forms a conspicuous portion of the flower, and gives it a more elongated appearance than it otherwise would have. Moreover, while in *Harryana* and *Lindeni* we have the dorsalsepal twisted and flexible like a thong, in this there is the same rigidity as there is in the inferior sepals, and consequently the dorsal sepal stands flat and erect. The margins of all these sepals roll back for two-thirds of the length of the flower, counting from the dorsal sepal downwards, so that each flower looks, when closely examined, to be turned outwards and backwards like the lapel of a coat. It is not an unpleasing distinction, but it is very decided, as all the others we have named stand flat to the face. Nature has been more bountiful to this species than to the others, for on its surface are multitudinous crimson hairs glowing in the sun with great vividness, and imparting a delightful contrast to the orange with which the crimson is more or less suffused. The orange colour predominates in broad, almost formal, flakes, on the inner faces of the inferior sepals, so that we have a flower possessing even more interesting details than *Harryana*.

Lindeni.—This is likewise a gem. Its

soft, glowing, puce colour captivates the eye at once. Botanically speaking, it is not very distinct from *Harryana*, but it is not sportive. In almost every case the tint or hue of colour is the same. The flower is, however, much smaller than that of *Harryana*, its lobes are rather more divided, and its dorsal sepal smaller. It has the same thong-like appearance, throwing itself back and looking as if it would twist itself into a knot. It has a pure white eye at the orifice, and is also white at the neck in connection with its peduncle. It has no relation at all, as was once thought, to *M. coccinea*, that being a distinct species from all others, distinct in flower and in growth. We would not, however, hesitate to merge it with *Harryana*, as they have little else but colour distinction to separate them, only *Lindeni*, so-called,



Davallia hemiptera.

is poor in comparison with many of the exceedingly brilliant forms of *Harryana*.

Igneæ.—This is quite a distinct species, distinct in its mode of growth, in the formation of its flower, and in other minor characteristics. It is the nearest approach to a scarlet which we have in the family, not even excepting *coccinea*, which has much of the orange-scarlet about it; ignea, however, is as fiery in appearance as its name would betoken. Like the others, it is monosepalous, and, like them too, it has very minute petals, lip, and column. These last parts are more completely concealed than in any of the other species by the dorsal sepal; instead of being thrown back as in the others, it bends forward and stands parallel to the inferior sepals underneath it. This is a marked characteristic in this species, although in regard to form it is much like *Harryana* and *Lindeni*.

Coccinea.—This is the shyest flowerer of the whole family. It has been cultivated in England for a quarter of a century, and it would not be going beyond the fact to say that it has not flowered twenty-five times. This is owing in some degree to its being kept in too great summer heat, as we find it flowers annually when it gets strong, and the flowers are beautiful, but by no means so good as those already named and described. It resembles *M. ignea* in having its dorsal sepal bent forward; but it does not look flexible, and stands at an angle of considerable elevation, exposing the orifice of the tube, and the petals, lip, and column, to the eye of the observer and to the action of insects. Its two inferior sepals, although connate, are only so towards the base, and the flower generally is not so large as its more immediate associates. It will be still sought after, although it must give place to every one of those named above.

Tovarensis.—This is the purest white that could be imagined, purer even than that of the Butterfly Orchid (*Phalænapsis*). Its sepals resemble those of *Lindeni*, but run abruptly more to a point. It is the only one of the large-growing section that produces from a three to a five-flowered peduncle, and it is the only one, too, except *M. infracta*, *M. ochracea*, and such like, that will bear flowers a second and even a third time from the same peduncle. It is the most valuable of the section to which it belongs, and grows freely in a cool house. Its habit is much like that of *Harryana*, but the leaves are paler, although in good cultivation they grow quite as large.

Caudata.—This is the one collected by Bruckmüller, that came home in such quantities, and it would have borne his name but for a prior claim in favour of *caudata*. Some of the varieties of this are very poor; one which we have flowered is, however, very good, large, beautifully spotted, and altogether captivating; this form resembles *M. infracta*, the dorsal sepal being nearly uniform in size with the inferior ones, and the orifice consequently wider. The petaline segments are much larger than those of any of the family, and so is the labellum. Its colour is not particularly showy, although in point of detail this species will vie with any in cultivation. The sepals then are broad and terminate abruptly in a point, the ground-colour is greenish-white, becoming more fixed as the flowers get older. On the ground-colour is a series of lines of dull crimson spots radiating from the base towards the extremity. The petals are also spotted in the same way, and the labellum, which is jointed like that of a *Bolbophyllum*, is covered with short dense hairs; altogether it is a most interesting variety.

These species are the best in cultivation, and we would commend all who have the means of growing them to do so; and if they keep them cool enough in summer, and give them plenty of moisture, both in the atmosphere and at the root, they will be rewarded with quantities of flowers of the most brilliant and captivating character. All that has to be done in winter to be safe is never to allow the thermometer in the frame or greenhouse in which these plants are grown to fall below 40°, and in no case up till the month of March to have them above 60° of the same standard. Keep them hugging the glass and out of the sun in summer, and give them as much of it as they can get from November to March.—*The Farmer*.

BOUGAINVILLEAS AS POT PLANTS.

It has been said that *B. glabra* is the only species belonging to this handsome genus that succeeds satisfactorily in pots; but that is a mistake; for *B. speciosa* thrives equally well under pot treatment, and is much more showy and beautiful than *B. glabra*. The latter is however hardier than *B. speciosa*, and will flower in a lower temperature. It should be allowed to rest thoroughly during winter, in the cool end of a stove. In January it should be pruned back close to the old wood, just as one would prune a Vine, and then it should be shifted, shaking out a good portion of the old soil, and repotting in good turfy loam, with which a little charcoal has been mixed. As soon as it is a little established, it should be started in a brisk heat, and almost as soon as it begins to grow it will commence to flower, and continue doing so

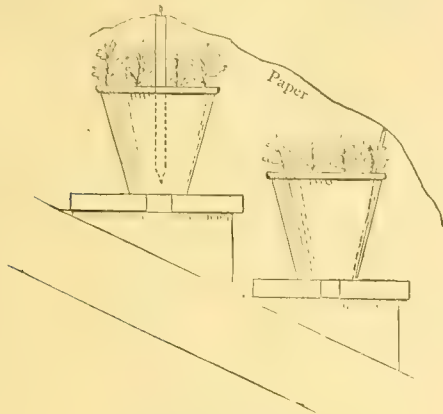
from April to August or September. The habit of growth of this species is very compact and neat, and on every little shoot will be almost certain to appear beautifully coloured bracts, which are very effective. *B. speciosa*, which is very often confounded with and named *B. spectabilis*, differs from *B. glabra* in having very dark leaves, covered on the upper surface with small hairs, while those of *B. glabra* are bright green and quite smooth. *B. speciosa* produces large panicles or wreaths of bracts of a lovely mauve colour. It is the kind brought prominently into notice some years ago by Mr. Daniels, of Swyncombe, who was the first cultivator who succeeded in blooming this beautiful species in England. A friend of mine had at one time a plant of it in a 9-inch pot. The same year in which it came into his possession he shifted it into the same pot in which it has since been grown for the past six years. The first year it bloomed very shyly indeed, but the year following, and up to the present time it has flowered abundantly—so much so, that at times it has been found necessary to cut away several panicles of flowers to make room for others, so freely were they produced, and they averaged 2 feet in length, and the bracts were finely coloured. The mode of treatment pursued differs but little from that followed in the case of *B. glabra*, only it is never allowed to lose all its foliage, as in the case of the last-named kind. The same soil is used for potting purposes; and during the time the plant is in flower, which is from the beginning of April till the end of June, it is placed in a cool conservatory. When it has done blooming it is taken to the stove to induce it to make and also to ripen its growth; a point of much importance with this as well as with other kinds of hard-wooded plants. About February or early in March a dressing of similar soil to that in which it was potted is given. When it commences to make growth it is kept well watered, and, when the bracts begin to colour, plenty of manure-water is given till they become fully expanded; then it is withheld, and only clear water is administered. The reason why *B. speciosa* frequently fails when cultivated in pots is because it is kept too dry and not allowed to make free growth. A spherical wire trellis, like that used for such climbing plants as *Dipladenia amabilis*, *Cissus discolor*, and similar plants should be provided for it, and over this it should be allowed to ramble at will during the time it is making its growth; and when the bracts begin to exhibit themselves the plant can be tied into shape. *B. spectabilis*, the kind with which *speciosa* is confounded, has never flowered satisfactorily in this country. Mr. Daniels, who has succeeded in blooming it, states that the bracts begin to show in November, and that, consequently, from want of sun at that dull season, they generally drop off. It is to the cultivation of *B. glabra* and *B. speciosa* in pots, and especially the latter, that cultivators should turn their attention. It is difficult at times to find room in a stove to plant out this glorious Brazilian climber, but space could be afforded in most places for a specimen in a pot. It is a most effective exhibition plant; and wherever a fine example of it is met with, it clearly proves that the grower of it has claims to be reckoned among the most successful and best accomplished of plant cultivators.

R. D.

A New Winter-flowering Sage.—Under the name of *Salvia rutilans*, M. Carrière calls attention to a variety of *Salvia* not uncommon on the Continent, which he considers an excellent subject for greenhouse or conservatory decoration at a season when flowers are least plentiful. The following is his description of it in the last number of the *Revue Horticole*:—Stems numerous, branching, from 2½ feet to nearly 4 feet high; leaves long, oval, lance-shaped, rounded and notched at the base, with very long acuminate points, and covered with soft down; flowers numerous, of a very brilliant scarlet, arranged in spike-like racemes at the extremities of the branches. It commences to flower in October, and blooms continuously through a great part of the winter. The plant is a vigorous grower, and succeeds in almost any light and warm soil. Young plants should be grown in a mixture of free loam, spent hot-bed material, and a little peat soil. Old plants may be planted out in the open air in ordinary garden soil as soon as all danger from frost has ceased. Those intended for indoor decoration in winter should be planted in a good airy position, in rich well-prepared soil. During the summer they should be watered as they require it, and the most vigorous shoots should be well pinched in, so as to form neat and compact little bushes, of regular shape, and rather dwarf stature. About the end of August they should be taken up, potted, and transferred to a temperate house. At this time they require a good deal of water. In less than two months they will come into bloom; and, judging from the coloured plate given by M. Carrière, the brilliant scarlet flowers must be exceedingly effective, and the plant is doubly valuable for producing such a long continuous bloom in the dull season. It is easily propagated by cuttings, which strike readily. *Salvia rutilans* is now being sent out by MM. Thibaut and Keteleer, nurserymen, Sceaux, France.

PAPER PLANT SHADES.

It is often a cause of loss to an amateur, that he has not an easy way to shade a plant or two, or a few seedlings just pricked out and put on the greenhouse shelf. The little contrivance here figured consists simply of a short stick with a scrap of wire or a long brad let into the end of it, the other end being pointed. Push such sticks into the pots or into the nicks of the shelves of the top row that wants the shade. Insert other sticks of any kind into the lower pots, so as to keep the shading material from bearing on the plants; then lay newspapers over them, allowing the small points of wire to pierce the top edge of the paper, which then falls nicely over the



Paper Plant Shade.

lower pots and shades them, while by merely lifting up the lower edge you can look at the plants at leisure, without in any way disturbing the arrangement.

A. DAWSON.

Everlastings.—What is the proper treatment of *Phænocoma prolifera grandiflora*? what the best way to propagate it? and what, also, is the best time to cut the flowers, so that they may be used for decoration during the winter?—JUNIOR. [This kind of Everlasting succeeds best in pots well drained in good fibrous peat, with a liberal admixture of sand. The temperature and general treatment should be the same as those given to ordinary hard-wooded greenhouse plants, except that these everlastings dislike syringing overhead. They strike freely from bits of leading shoots about 2 or 3 inches long, inserted in silver-sand and covered with a bell-glass. If required for drying, the flowers should be gathered as soon as they are fully expanded.]

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Fragaria indica.—This plant somewhat resembles *F. semperflorens*, but is more drooping in habit. It is a very pretty plant for a bracket in the greenhouse, or as a window plant. It grows freely in a moderate temperature, and produces its pretty white flowers and crimson fruit in tolerable abundance.—F. W. B.

Anemia rotundifolia.—This is a distinct Brazilian species, which may be seen growing at Kew, and is interesting on account of its closely resembling the very rare deciduous *Adiantum lunulatum*. Like the last named species, it has oblong, oblique, curved pinnae, and is also furnished with a viviparous, caudate termination of the rachis.

The Aquatic Fern (*Ceratopteris thalictroides*).—This rare and interesting species may now be seen growing vigorously in the Victoria House, at Kew. It has also been cultivated by Mr. Speed, at Chatsworth, for several years past, and is admirably adapted for aquarium culture. It grows very freely potted in fibrous loam and a little sand, after which the pot may be plunged below the surface of the tank. Like the beautiful *Aponogeton distachyum*, this plant will grow well in a large bell glass where the convenience of a tank or aquarium is not at hand.

Orchis foliosa.—One of the best plants of this fine herbaceous Orchid we have ever seen, if we except a fine specimen of it shown some years ago by Mr. A. Turner, of Leicester, was one exhibited by Mr. T. Ware, at the Royal Horticultural Society's Show at Bath. The leafy stems of this plant were about 2 feet high, each bearing at its apex a dense spike of large purple flowers. The plant was in a fresh and healthy state, being furnished with a profusion of healthy foliage. It is a native of Madeira, but does well in a cool greenhouse, potted in a compost of turfy loam and peat, the pot being thoroughly well drained.—B.

Cordyline Banksii.—This is grown chiefly for the beauty of its leaves, but I have just now two plants of it flowering beautifully in my conservatory, to which, in that condition, they are great ornaments. They are planted out in a border of good loam, are of medium size, and well furnished with healthy foliage. Each has produced great branched panicles of pure white flowers, that are at once graceful and showy. These plants have received no special care since they were planted out last year, and the temperature of the conservatory is only kept from falling under the freezing point in winter.—WILLIAM EGLINGTON.

THE GARDEN GUIDE.

SUFFOLK.

THORNHAM HALL.

THIS stands in a well-wooded park, containing about 4,000 acres. The Oaks and other timber trees growing here are old and fine, and the whole place possesses an air of nobility and grandeur. The gardens and grounds are extensive and varied, comprehending a variety of styles of furnishing; such as, for instance, a geometrical flower-garden under the windows, scroll-gardens in Box, mixed flower-garden, Rosery, avenue of turf, groups of shrubs, and choice trees—a succession of distinct scenes of beauty, each differing from the others. Then there are old-fashioned conservatories, verandahs, and covered ways leading into the kitchen garden, where there is a nice range of glass well filled with flowering plants, Grapes, Peaches, Melons, &c. Dinner-table, room, and staircase decorations have long been a great feature at Thornham Hall, and great quantities of plants are specially grown for that purpose. We saw here the finest lot of *Poinsettia* and *Euphorbia jaquinæflora* that we have ever seen. The fruit and vegetable departments are carefully managed, the walls are well furnished, and the fruit houses likewise.—The Earl of Hartesmere (Lord Henniker); gardener Mr. John Perkins. Three miles and a half south-west of Eye.

GLEVERING HALL.

This is a substantial brick mansion, standing in a large park near Wickham Market, and surrounded by nice gardens and extensive pleasure grounds. The park is comparatively modern, and is well wooded; and great pains were taken some years since to get the common Furze established in large patches all over it as covert. On the south side of the house is a geometrical flower garden; on the west a smooth lawn, and on a higher level, standing at right angles to the house, is a noble architectural span-roofed conservatory, with a cupola on the top—a conspicuous object in the surrounding scenery. There is here a *Taxodium sempervirens* 40 feet high, and 6 feet in girth 1 foot from the ground. The conservatory generally contains some of the finest specimen Camellias and Rhododendrons to be seen in this county. The kitchen gardens here have long been celebrated for the excellence of their Pear trees on the walls.—Occupied by Colonel Charteris; gardener, Mr. Hill. One mile from Wickham Market, six miles from Woodbridge.

HIGH HOUSE, CAMPSEY ASH.

This is a quaint old building, almost surrounded on two sides by canals, evidently the remains of a moat almost universal around old houses in East Anglia. Even the best of farm houses have traces of moats. In front of the house is a bowling-green, enclosed by a Yew hedge, thick, dense, and high. The top is finished with grotesque figures cut out of the Yew. This curious hedge makes the house look older than it really is. There are also some very fine far-reaching Cedars of Lebanon upon the lawn, probably the oldest in the county, the branches of which are supported and bound together with iron bars, clasps, and chains. Roses do exceedingly well at Campsey Ash, and quantities of them are grown in borders and in beds. Double hardy Primroses were largely grown at one time in these gardens, especially the claret, or bright purple kinds. The flower garden and lawn are pretty, and the kitchen garden fruitful and close at hand. There are also some nice plant and fruit houses.—J. G. Sheppard, Esq.; gardener, Mr. Keen. Two miles east of Wickham Market, six miles N.N.E. of Woodbridge.

RENDLESHAM HALL.

This mansion is surrounded by far-reaching shrubberies, extensive lawns, and glowing flower gardens. The position is somewhat flat, but remarkably well wooded. The kitchen gardens have long been celebrated for their fruitfulness, and especially for the excellence of the Grapes produced in a noble range of Vineries, lofty and wide, stretching right across the garden. Most of these have been renovated and newly planted, and they still sustain and even excel their former reputation. An excellent collection of fine Camellias has also for many years been one of the finest features of these gardens. Several houses are devoted to Orchids, among which are some fine specimens. Fine foliage, stove, and greenhouse plants and Ferns are also particularly well grown; amongst others, *Adiantum Farleyense*, and *Davallia Mooreana* are noble examples of grace and beauty. There are many plant and fruit houses—some of the former of large dimensions, giving full scope for the growth of large specimens, for which Rendlesham is now becoming famous. There are few gardens in the county more worthy of a visit. The new flower garden in front of the Hall is remarkably well furnished, and indoors the lover of plants, especially of Orchids, will find much to admire.—Lord Rendlesham; gardener, Mr. Mills. Five miles north-east of Woodbridge, three miles south-east of Wickham Market, the station being within about two miles.

GARDEN DESTROYERS.

WIREWORMS AND GRUBS.

DURING last spring I added a piece of new meadow land to my kitchen garden, and find now that it is so infested with wireworms and brown grubs, which destroy all my young Cauliflower and Cabbage plants, as to render my new garden useless. How can I destroy them?—W. [These vermin are always destructive to vegetation; that is to say, every kind of vegetable planted on newly broken-up pasture or old turf-land is sure to suffer from wireworm, if not perseveringly attended to for the first two years afterwards with tolerably liberal dredgings of salt, at the rate of 6 cwt. to 8 cwt. per acre, when the weather is cloudy and rainy, and constant surface stirring of the soil, with hand scarifying or methodical hoeing on fine dry days, no matter how often it is performed, in order to well intermix and incorporate the soil. The treatment described, however, will very soon eradicate the grub and wireworm, and wonderfully improve the growth and health of all kinds of garden vegetation. At the same time, if any part of the ground is pretty well covered with growing vegetation, and it is not convenient to sow or cast on the salt in a regular way evenly all over the surface, sow over and amongst the crops broken-up or small pieces and dust of linseed oilcake. This the wireworms will eat, and then swell up and burst; but salt is the masterpiece to clear such vermin permanently. It will very soon do so if methodically applied, and will also improve the soil for a luxuriant vegetation for the future. As soon as any crop is cleared, apply a dredging of salt and fresh air-slaked hot lime; give the surface a good deep scarifying; fork, and tumble it up into rough ridges, in width according to the crop intended to be planted, and plant or sow half-way up the ridges on one or both sides, or on every other ridge, according to the distance you wish, thus affording a convenience not only of observing the ravages of any stray wireworm or grub, but exposing a good deal of the earth's surface to atmospheric influence; pulverise it afterwards, and hoe and scarify it down in a healthy state, so as to torment the enemy. Nevertheless, the best way, as I have long ago experienced in practice, is, in taking into use or breaking up old pastures, either for garden or farm, first to dredge the surface with salt previous to putting plough, fork, or spade into it, and folding sheep on it for two or three nights, applying a dredging of salt at the rate of 4 cwt. or 5 cwt. to the acre each day, evenly all over it, and I have never afterwards been troubled with a wireworm, grub, fernfly, or cockchafer—all terrible enemies to the gardener and farmer. I have grown afterwards the most extraordinary crops of Mangolds, Swedes, Turnips, Cow Cabbage, Clover, and Trifoliums ever seen on the farm, and every kind of vegetable in the garden—clean, crisp, luxuriant, and heavy. These vermin, like Couch Grass and other obnoxious weeds, are sent no doubt for the good purpose of inducing us to cultivate and improve the soil, and increase our crops in bulk and luxuriance. Deep cultivation, and constant stirring the surface of the soil, are the death-blow to all weeds and vermin. I have fully proved it in practice many years since, and if methodically followed up our crops throughout the country would soon be doubled.—James Barnes, in *The Field*.

The Mole Cricket.—This pest, so great an enemy to the cultivator in France, is probably often the cause of much damage to many subjects without the destroyer being suspected. M. Souchet has several fields planted with Gladioli, and the moment a trace of the mole cricket is seen, a workman follows up the run with his finger till the spot over where it rests is arrived at, and then the hole is made wide at top, and immediately afterwards filled with water to the brim. On the top of the water they then pour a little oil, which gradually descends with the water, and closing up the breathing tubes of the mischievous little brute, it begins to perish of asphyxia, and generally comes out and dies on the surface of the earth. M. Souchet is so impressed with the necessity of destroying this pest that even his unoccupied land is rolled quite flat, so that the tracks of the insect may be seen at a glance, which they could not be in rough cloddy soil; and when its presence is shown by decayed plants in the thickly planted beds of Gladioli, but its run cannot be traced, the ground is trodden quite firm and smooth between the rows, so that its little pathway is readily seen the next time it goes to work. A rough jar of water and one of oil are always kept at hand. Of course the insect may be dug out if the land is unoccupied, but the water and few drops of oil on its surface is the quickest and surest plan, and, in planted beds, the only practicable one.

To Exterminate Ants.—Perhaps as good a way as any of exterminating a nest of ants is to dig the nest open and flood it with a kettle of boiling water. If a bushel of quicklime is then thrown in and the earth replaced the colony will be broken up, and the few ants left will seek other quarters.

ASPECTS OF VEGETATION.

CONSTANTLY living in northern latitudes, we form but feeble notions of the extreme vigour and luxuriance of tropical vegetation, a vigour induced in a great measure by an enormous rainfall and the genial heat and brilliant light of a tropical sun. Bathed in constant heat and humidity, vegetation grows rampant; flowering, fruiting, reproduction, and decay go on simultaneously, or follow each other in quick succession. Travellers frequently tell us in their works of the wondrous vegetation they have met with in the tropics, but it is not everyone who cares to wade through page after page of descriptive matter, and when we attempt the task we often obtain but very faint ideas of the effects described. It is not everyone who possesses the sparkling imagination and descriptive power of a Kingsley; were it so, the tropics would be far better understood than they are at present, and it is only by the combined use of pen and pencil that we can hope to make various aspects of vegetation understood by our readers. In the illustration now before us, we have a Mexican scene, showing a neat little hacienda snugly embowered in a strip of forest trees, among which rambling Lianas twist and twine themselves into grotesque and weird contorted masses, or coil themselves round the stems and branches with all the grace of a serpent's folds. Here and there in these strips of primæval forests, these Lianas become partially detached by the fall of some monarch of the forest, and hang from the over-hanging branches of the surrounding trees in irregular wreaths of fresh drooping foliage and bright-coloured sweetly-perfumed flowers. Here, in the noontide heat, flit gaily-painted butterflies—like living moving flowers—while richly enamelled diurnal beetles flit to and fro in the golden sunlight. In the foreground of our picture we have an impenetrable fence formed by planting the common American Aloe, or "Century plant" (*Agave americana*), interspersed here and there with columnar Cacti (*Cereus*). Other succulent plants are used for forming fences and boundaries in Mexico, one of the most important being *Opuntia Tuna* or Prickly Pear. Both the *Opuntia* and the *Agave* are also utilised in other ways, the latter yielding a valuable fibre and a vinous juice, which, after being fermented, is known by the vernacular name of "pulque," and is of a refreshing nature, but characterised by the odour of decomposed meat. From this juice an intoxicating spirit is made, of an extremely fiery nature, called "Mexical," or "Aguardiente de Maguey." On the left side of the picture, graceful Palms throw up their feathery foliage, and their fibrous roots, ever seeking for moisture, dive deep into the decayed bed of humus below. The little ranch is nearly covered with juicy Gourds and other rank trailing plants, and here, once more, we see nature striving for the mastery against all opposition. Great-leaved Musas and rank Grasses occupy the middle distance, and beyond are two fine Palms, probably planted as ornaments to the little "hacienda" or planter's house, which forms a prominent feature in the annexed illustration.

We here see some of the picturesque effects to be obtained by judiciously grouping massive succulents along with graceful Palms in our conservatories or sub-tropical grounds, and this effect would be all the more apparent if the *Agaves* were in great clumps or irregular masses, instead of being in the monotonous and formal line of the fence. In the picture before us, it must be borne in mind that we have little else but a natural scene pure and simple, and one in which planting for effect was perhaps the last consideration, if we except the pair of Palms to which we have just alluded. Another lesson given here is, that extremely fine effects may be obtained in our gardens, during the summer and autumn months, by planting some of the strong-growing Gourds in light, richly-manured earth, and training them over any low out-house or low retaining wall. We may hope that as our knowledge of the varied aspects of the world's vegetation increases, so will the beauty of our gardens be also enhanced by well-arranged groups of varied and striking vegetation, amid surroundings that will show off their beauty to the best advantage, while characteristic vigour and simple elegance of form shall at least be thought as effective in garden scenery as gaudy masses of colour.

F. W. B.

VEGETATION AROUND A COUNTRY-HOUSE IN MEXICO.



THE HOUSEHOLD.

HOW PRUNES ARE PREPARED.*

IN the valley of Villeneuve-sur-Lot, the process employed for converting the Agen Plum into Prunes is as follows:—To make good Prunes the Plums ought to be quite ripe, so as to fall from the tree, when they are collected off the ground. It is only towards the close of the season that the trees are shaken to detach the late ones. In the stubble fields the ground is slightly dug and smoothed, and sometimes straw is spread under the trees that the fruit may not be injured by the fall. The fruit, which is collected every day, or every two days, is carefully washed if spotted with earth, and then is placed on Osier frames and exposed to the sun's action by turning frequently, which partly dries them, and prevents their bursting when baked. This is done in common ovens, or in stoves for the purpose, and on the same frames as are used for the drying. These are made of Osiers, or runners of Clematis, tied together, and surrounded by a stick which rises above the edge and keeps the fruit from falling off. They are round or pear-shaped; the round ones are 2 feet in diameter, the others 40 inches long by 20 inches wide.

The object of baking is to get rid of the superfluous moisture without affecting the other constituents, and to keep the skin from bursting, and letting the juice escape. Three bakings are usually required; the first at a heat of 165° to 195° F., the heat of the second is raised to 210° or 230° F., the third to 250°. The oven is fed with chips or straw, and care is taken to close it completely as soon as the Plums are put in. After each baking the Plums are taken out, and perfectly cooled and turned before they are again baked. The process is complete when the Prunes retain a certain amount of elasticity, yielding and rising again under slight pressure of the fingers. It has been well conducted if the Prunes are not burnt, and if the skin is not broken, but shining as if it were covered with a slight varnish. In this state the Prunes are sold by the farmers, before they are classed for the purposes of commerce. The Prunes of Tours are prepared in the same way. In Provence another method is adopted. The Plums, placed in a basket, are plunged into a vessel of boiling-water, and kept there until the water returns to the boiling state. They are then taken out, dried, and shaken till they are cold, after which they are placed on the frames, under cover, in sheds, and when they are nearly dried they are placed in the sun to complete the process. The Brignoles Prunes or Pistoles require different treatment. They are the fruit of the Perdrigon Violet Plum tree, and are chiefly prepared at Brignoles, and Estoublon, near Digne (Basses Alpes). The fruit is gathered at the end of July, after the dew is off, and they are quite dry. The next day, women take off the skin with their nails, and to prevent their being touched with anything that would injure them, transfix them with sticks about the thickness of a quill so as not to touch each other, and then run the sticks into a rope of well-twisted straw 3 yards long, with a hook at the end of it to suspend it from a cross beam. The Prunes are exposed in this state to the sun for four or five days, being placed at night, or when it rains, under cover in a dry place; when the Prunes no longer adhere to the sticks they are drawn off and stoned. They are next flattened and placed on the frames. When they are nearly dried they are again pressed and exposed to complete desiccation in the sun, after which they are packed for sale.

NOTES AND QUESTIONS ON THE HOUSEHOLD.

Cucumber Catsup.—Gather the Cucumbers when full grown, but before they turn yellow; peel and grate them; let the pulp remain upon a cullender until the juice drains off; then rub through a coarse sieve, to separate the seeds; half fill bottles with this pulp, fill up with vinegar, and keep well corked. This retains, in a marked degree, the odour and taste of fresh Cucumbers, and is excellent with cold meats. When served upon the table, salt and pepper are added.

Strawberry Ice-Cream.—Take a quart of berries, and sprinkle over them one large coffee-cup of fine white sugar; let them stand for two or three hours, and then mash them up fine, and squeeze out the juice through a strong cloth. Add another large cup of sugar to this juice, and then stir in one quart of pure sweet cream, or a pint and a half of cream and the beaten whites of three eggs. Mix all together and freeze, and when half frozen, turn in one pint of fresh berries and freeze stiff. The juice should be made very sweet, or else it will curdle the cream.

* From Du Breuil's "Arbres Fruitiers." Translated by T. Ogier Ward, M.A.

THE GARDEN IN THE HOUSE.

PLANTS FOR BASKETS.

NEATLY arranged baskets of trailing plants, flowers, and Ferns always produce a good and pleasing effect when growing either in a conservatory, in a window, or out of doors suspended from a balcony or verandah. In the conservatory, baskets suspended from the roof catch the eye. Fresh foliage and slender stems, with a few flowers interspersed to give colour, refresh the eye, and at the same time relieve the monotony of architectural details. We have abundant materials for basket flowers of all kinds, either hardy or tropical, and the greatest wonder is that we so seldom meet with nicely arranged baskets of plants in our gardens and greenhouses. In the large conservatory at Chatsworth, the baskets are now at their best, and a valuable lesson on this kind of ornamental gardening may be learned from the grand examples to be seen there all the year round. It is said that "example is better than precept," and if any of our readers would like to see hanging baskets really well done, we cannot do better than recommend them to visit Chatsworth for that purpose.

BASKETS IN THE CONSERVATORY.

For this purpose we can use the smaller Ferns, slender Maiden-hairs for the dense fresh green undergrowth, so to speak, and the bolder *Platynerium* or Stag's-horn Ferns, together with *Cyrtomiums*, large-leaved *Adiantums*, and *Aspleniums* for variety and contrast. Among the larger Ferns for baskets, we may notice *Nephrolepis Davallioides* as being a very effective drooping species when well grown; *Polypodium subauriculatum* is another first-rate pendulous species, drooping 6 or 7 feet below the basket when fully developed. *Platynerium alcinorne* is a noble and distinct basket Fern, and does well planted in peat and living sphagnum, and liberally watered. When making up these baskets in spring and autumn, it is as well to make provision with a good body of soil, otherwise the trouble of constant watering will soon be deemed a nuisance; but when a good body of soil gets overgrown with Ferns, *Selaginellas*, *Isolepis*, *Ficus repens*, and other creeping and trailing plants, one or two good waterings every week will be found sufficient. Nice baskets may be made up with various fresh green Ferns, among which tubers of *Achimenes* may be planted, and a few rooted cuttings of *Iresine Herbstii*. The latter plant grows freely, and its port-wine-coloured leaves are very effective among green-leaved plants, when suspended near the glass. *Hoyas* and *Æschynanthus* make nice plants for basket-work, and *Begonia foliosa*, and one or two other dwarf species may be added with effect. *Fittonia argyreneura*, *Gymnostachyum Pearcei*, *Tradescantia zebrina*, *Panicum variegatum*, and *Cissus discolor*, are nice variegated-leaved plants, and very effective in baskets. In arranging the plants avoid crowding, and try to get as much variety as possible in each basket, by arranging slender Ferns and Grass-like plants in contiguity to more massive succulents, such as *Sedum Sieboldii*, *Echeveria secunda*, and *E. secunda glauca*, or the larger Ferns. *Torenia asiatica* and *Russellia juncea*, are two pretty stove plants for growing in baskets. These are now seldom seen in cultivation. In particular cases the baskets have to be hung at a considerable height from the floor, so that watering them becomes a troublesome matter to attend to, and in many cases they may be neglected if some simple means are not resorted to. In such cases it is a good plan to hook the basket to the end of a stout cord or copper wire, passing it over a simple pulley made fast in the rafters at the top. The other end of the cord may be tied to a hook made fast in one of the pillars, and by this simple contrivance the basket may be lowered for watering or for clearing off dead flowers and leaves, and then drawn up again and made secure at any height that may be required.

BASKETS FOR WINDOWS.

These should be much smaller in size than those used in the conservatory, and they will also require to be filled with half-hardy or hardy plants. *Saxifraga japonica* and *S. sarmentosa* are well suited for window baskets or as bracket plants. Our illustration represents a variegated variety of the old *S. sarmentosa*, a very valuable window plant. Cam-

panula gracilis and *Sedum Sieboldii* are also suitable for the window, and a plant or two of *Fragaria indica* may be used. This plant droops gracefully a foot or 18 inches below the basket, and bears numerous small white flowers and crimson fruits, as large as Hazel nuts, among its fresh green foliage. The common *Lysimachia Nummularia* (or Creeping Jenny as it is frequently called) is a good plant for window baskets. It grows profusely if liberally watered, and its fresh foliage, borne on gracefully-drooping stems, is very refreshing to the eye and effective in toning down the colours of flowering plants near it. The common Musk, planted in a basket, grows well, and is a desirable plant for its perfume. Flowering plants of various kinds, especially such succulent plants as the *Mesembryanthemums* and *Echeverias*, may be added, as they grow freely and require but little attention. Many hardy and exotic Ferns may be grown in the window, and one of the prettiest little plants for this purpose is *Asplenium flabelliforme*. In making up window baskets, it is best not to employ plants of a tender or uncertain nature, but rather to rely on good old hardy, or herbaceous kinds,



Saxifraga grown in a basket.

which grow and flower with but a little ordinary care and attention.

BASKETS FOR THE BALCONY AND VERANDAH.

If the balcony or verandah is nicely clothed with Honey-suckles, Virginian Creepers, Hops, Ivy, or climbing Roses, all that is required to give it a finishing touch, and complete the whole, is a basket or two hung between the pillars. These baskets may be made of "virgin" cork, or rustic varnished wood-work. These may be covered with small-leaved Ivies, both green and variegated, and bedding plants, such as blue Lobelias, Nasturtiums, or Iresine. Many hardy British plants may also be used with good effect, such as the Creeping Jenny or Moneywort, previously recommended for windows. Various succulents, such as *Sedums*, *Saxifrages*, *Sempervivums*, and *Echeverias*, are very effective along with dark-leaved Ivies and other foliage plants. Some of the trailing *Nasturtiums*, *Convolvulus mauritanicus*, and many other elegant drooping plants, may be used with good results. It should be borne in mind that the soil in baskets is more fully exposed to the drying effects of the atmosphere than that in pots; hence, it becomes necessary to supply abundance of moisture, either in the evening or early morning. The introduction of a few baskets of plants in suitable positions makes a wonderful improvement in the appearance of windows and conservatories, while the little trouble that is required in growing them is amply repaid by their beautiful flowers and the picturesque masses of their cool green foliage.

W.

SUCCULENTS AS WINDOW PLANTS.

MANY of these plants are admirably suited for window culture, being dwarf, singular in aspect, and many of them free flowering. They succeed with very little care, and look well all the year round. A little water once a week satisfies them, and even if one has a whole window full of them, and leaves them for a month, they will be found at the end of that time as fresh as at the beginning. Those best suited for windows are the dwarf kinds that bloom freely and which look well when not in flower. Most of the *Sedums*, *Sempervivums*, and *Echeverias*, do well as window plants grown in small pots. *Echeveria glauca* is an admirable window plant, its silvery foliage being arranged like a rosette, while its orange-scarlet flowers are borne in tolerable abundance. The same may be said of *Sempervivum montanum*, a dwarf-growing and very effective species. The old *Sedum Fabianum* is a fine autumn flowering plant when well grown, either as a window or conservatory plant; but among the best of all succulents for window culture are the *Mesembryanthemums*. These are dwarf and free flowering, and do well either in baskets or on brackets. They are easily propagated from cuttings, and soon grow on into nice little specimens. A few of the best and freest flowering kinds, best suited for window gardening are—*M. imbricans*, which bears numerous bright purple flowers; *M. incurvum* is more robust in habit than the last, and has larger flowers of a pale purple-lilac colour; *M. aurantium* bears bright orange flowers and looks very distinct in contrast with the purple-flowered species; *M. deflexum* is pale rose; *M. lacerum* is an effective plant, even when not in flower, having large green leaves serrated along their outer edges, and large rosy-purple flowers 2 inches in diameter; *M. glaucum* bears numerous golden-yellow flowers; *M. conspicuum* is another effective species, which bears large bright rosy flowers; *M. cruciforme* is pale silvery-lilac; *M. spectabile* is a plant of good habit, having glaucous three-edged foliage, and bearing numerous large bright purple flowers; and *M. amoenum* has a good habit, and bears a profusion of rosy-lilac blooms. To economise space, and to obtain variety, I have grown two or three kinds in the same pot—such as two purples and a yellow, or, say, a purple and white; combinations which look very effective, especially on bright sunny days, when all the flowers are open. *Kleinia repens* is also a pretty little window plant, and its blue foliage seldom fails to attract attention. *Pachyphytum bracteosum* and its congener, *P. roseum*, are likewise striking plants, as is also the old *Roechia falcata*, especially when in flower. *Gasterias* grow well in a sunny window, more particularly *G. verrucosa*, and a plant of the *Aloe variegata*, "The partridge-breasted Aloe," as it is frequently called in country districts, may be introduced for variety. Several varieties of *Phyllocactus* grow well and flower freely under window treatment, such as *P. Jenkinsii*, *P. nitens* (a white flowered variety), and others. *Cereus speciosissimus* also makes an effective flowering plant, though rather too spiny, and apt to get too large for most windows. Among the *Sempervivums* we have many kinds suitable for window culture, such as *S. Bollii*, *S. tabulaforme*, *S. tubulare*, *S. arboreum*, and its variegated variety; *S. tectorum*, and the purple-tipped *S. californicum*. Some of the *Mamillarias* and *Echinocacti* do very well, and occasionally flower in windows, forming effective objects, though their flowers are rather fugacious. *Cereus flagelliformis* is an old and useful window plant, either for suspending, or as a bracket plant in positions where its long cylindrical tail-like stems can hang downwards. This plant does well grafted on *Cereus speciosissimus*, and, when thoroughly established, flowers profusely in the spring and summer months. I have noticed a plant in a cottage window at Turnham Green for these last seven or eight years, and when in full bloom it forms a striking object. Some of the smaller *Agaves* or American Aloes are very effective as window plants, and assist in adding variety of form to the collection.

Succulents are very easily grown in a fresh sweet compost of fibrous loam, broken crocks, and coarse sand, taking care to drain the pots thoroughly, so that all superfluous moisture may readily escape. Especial care should be taken not to over-pot them, as, for obvious reasons, the smaller the pots the better. They should be exposed to the light and sun as much as pos-

sible, especially during the dull winter months, and water must be sparingly administered in winter, as the surest way of killing Succulents is over-watering them during dull cold weather. Most Succulents are easily propagated by means of cuttings or off-sets. In some cases, as the *Pachyphytum* for example, the lower leaves may be taken off and inserted in silver sand, where they will soon strike root. Most of the *Sempervivums* throw up off-sets, and the latent buds on *Mamillarias* and *Echinocacti* develop themselves into young plants, which if removed and placed on a pot of light sandy soil soon root and form plants. I had nearly forgotten to allude to a fine old-fashioned window plant, viz., *Crassula lactea*, a tolerably robust species, that bears a profusion of pure white stellate flowers all through the winter season, without any kind of forcing.

F. W. B.

Filmy Ferns indoors.—I have two or three Fern cases which I wish to furnish, and shall be glad if you will kindly mention a few of the filmy kinds most suitable for the purpose.—HARRIET E. [For a dark, close, and moist case the best of all plants are the Killarney Fern (*Trichomanes radicans*), *Trichomanes reniforme*, the beautiful New Zealand filmy Ferns with the transparent leaves, several of the New Zealand *Hymenophyllums*, *Todea superba pellucida*, and the two little British *Hymenophyllums*, *Wilsoni* and *Tunbridgensis*. These last form very interesting and beautiful plants for a case; their very texture seems fitted for the close, moist, and shady condition of an indoor fernery. They should be grown on a mixture of fibry sandy peat and broken sandstone, the whole pressed pretty firm and thoroughly drained. Plants to be kept moderately moist at all seasons. We have seen the Killarney Fern do well planted in a pot, well drained, and covered with a large bell-glass just fitting closely within the rim of the pot.]

Drying Flowers in Natural Colours.—A wooden box must be procured, deep enough for the flowers to stand up in without crushing; and in this they must be fastened upright, either by means of fine wire or cotton drawn round the stems to the sides of the box. The flowers should be freshly cut, but not wet. Take silver sand, and wash it, to remove all organic matter; dry it thoroughly, and wash again and again, till nothing but pure sand is left, and dry it perfectly. Then gently pour the sand into the box with the flowers, taking care that it supports the leaves, twigs, petals, &c., and does not crush them. This is a troublesome part of the process, as the sand must be poured in so very gradually, until the flowers are perfectly surrounded; and then proceed to pour a layer over the surface till quite covered. Leave the box in a place where it will not be disturbed for at least a fortnight, when the sand will have absorbed all the moisture of the flowers, and may be gently poured off. White flowers seldom answer well, as they will turn yellow. Cup flowers are best, but not double flowers or roses.—[Have any of our readers found this somewhat troublesome method answer?]

Cinerarias as Window Plants.—These form useful ornaments for windows, or for any position in which they can be kept cool, have a free circulation of air, and are near the light. They may be readily raised from seed, indeed they reproduce themselves freely from self-sown seeds if they are allowed to ripen and drop on the soil in the pots in which the parent plants are growing, or on the soil surrounding them. They require a rich compost to grow in, such as two parts yellow loam, one of leaf mould, and one of thoroughly decayed manure, and at no period of their existence must they be allowed to suffer from drought, though in winter the supply of moisture must naturally be somewhat less than that given in the more active growing periods of the season. The plants must be shifted from one pot to another as they require it, until they are in pots 6 inches in diameter, which are quite large enough for plants that are to be kept in windows, additional nourishment being supplied by means of manure-water. Strong sunshine is not beneficial to *Cinerarias* at any season, more particularly whilst they are growing; therefore a north-east or west aspect is the most desirable position for them if in windows, and if they can be accommodated on the outside till whilst there is no danger from frost or high winds, so much the better.

Iron or Terra-Cotta Vases—Allow me to say that good terra-cotta vases do not crack and fall to pieces with the weather, as your correspondent says all composition does, nor do they require any painting or sanding. They are made much thinner than stone, cement, or marble vases, and will hold as much soil as iron ones. Both marble and stone are frequently so thick as to leave but little space for soil.—JAMES PULHAM.

THE FRUIT GARDEN.

CULTURE OF THE FIG.

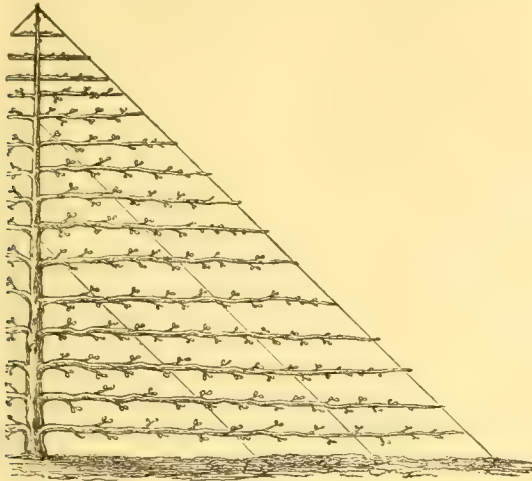
THE back wall of our Fig-house is 18 feet high, wired at 12 inches apart, 4 inches from the wall. Three fine trees fill the house; one perpetual blue *Ischia*, and two brown *Turkey*. The border is 3 feet wide and 3 feet deep, walled up and well drained; the soil turfy loam, fine chalk, road sand, leaf mould, and rough old mortar. The trees, ten years old, were taken up from the open wall in November, and carefully planted, all the fibres and roots being laid out, and then just covered with fine leaf mould, and watered to settle it well among the fibres, finally filling in and treading firmly. The wooden trellis, 2 feet wide to walk on, was then laid on. After the soil was settled the shoots were tied to the wires, fan fashion, at 9 inches apart. The trees were furnished with fine young spurs and short-jointed wood, from 9 inches to 1 foot long. Stopping of the young wood is seldom required, as the confinement of their roots keeps them full of short-jointed wood, and full of fruit. These three trees bore, the first year of planting, upwards of three hundred fruit of the highest and best possible flavour, which ripened from May to the end of October; at that time they drop their leaves, showing a fine crop of embryo Figs on their short-jointed wood and stocky spurs, distributed all over the trees. All the wood is sponged over with a mixture of warm water and soft soap, sulphur, and tobacco, as soon as the wood is ripe, and the leaves are off, which destroys scale and red spider. The border is kept dry from the 1st of October to the 1st of February, when it receives a good soaking of manure water; and, subsequently, a good soaking once a week, till the fruit is half swelled; it is then kept drier, being only sprinkled on the surface to keep a moist vapour. Never syringe while in bloom, or the fruit will fall; when one fruit is perceived to swell off, then keep them thoroughly watered twice a week; the second crop will stand without much trouble. The Fig house has a Vine under every rafter, which ripens a great many bunches in May and June; the Vines are trained on the single rod and spur system. There are three ranges of roof lights, openings in the front wall, and wooden shutters which are kept constantly open after fires are over; also the roof at top is kept open, and secure against flies by means of net, which, however, admits abundance of air. The summer's treatment consists in tying in the young wood; and after the second crop is swelling, to give the fruit as much light as possible, and abundance of air; shut up early, give air early, and apply abundance of moisture at the root; liquid manure should be given twice a week. The floor of the house should be kept constantly moist. Our house is heated on the old-fashioned plan with a brick flue, which runs all round from the east end, along the front, and up the back wall; the front flue is on arches, in a space 2 feet wide. This front flue likewise keeps the Vine border warm, and starts the Vines into growth. We have also a pit for forcing Figs in pots, tubs, or boxes.—W. C., *Basingstoke*.

Melon Culture.—When my young Melons have formed three perfect leaves, I stop them; and having a frame prepared for their reception, with not less than 12 inches of good loam trodden firmly down in it, when in a fit state I turn out the plants, one under the centre of each light. I now select some of the strongest shoots, and train, generally, four each way—viz., to back and front of the frame, not stopping them till they reach the sides. The system of pinching and stopping, which I have frequently seen practised, ought to be avoided, as it only tends to engender canker, and to impair the health and vigour of the plants. I invariably stop the laterals at two joints beyond the fruit; this prevents confusion, and provided the natural temperature be properly attended to, tends to expedite the setting of the fruit. I hold it to be good policy, during this critical period, to occasionally sprinkle the interior of the frame, taking care, however, not to wet the foliage, and to shut down with a temperature of 85°. With regard to water, I generally sprinkle the plants every afternoon in favourable weather, and maintain a temperature of 95° to 100°. By pursuing this method, I never fail to obtain an abundant supply of good fruit, and generally two crops from the same plants.—R., *Staffordshire*.

Hastening the Ripening of Pears.—Mr. Stall, an American cultivator, removed the earth about an early Pear tree eight weeks before the normal period of ripening, for a space 13 to 15 feet in diameter, and to such an extent as to leave a depth of earth over the roots of only about 2 inches or so, which could be thoroughly warmed by the sun. He was surprised not only by the ripening of the fruit in the middle of July, but also by its superior juiciness and flavour. In another experiment, the removal of the earth from the north side of a tree alone caused the fruit on that side to ripen several days earlier than that on the south side.

A SIMPLE FRUIT-TREE TRELLIS.

CONTINENTAL horticulturists employ a very simple and effective method of fixing up fruit-tree trellises, of which the accompanying is an illustration. An upright pole or stout stake is fixed firmly in the ground, after having been charred and dipped in gas tar to prevent its rotting, and to this wires are attached and secured firmly to the ground by means of stout wooden pegs. A trellis of this kind can be erected in a few minutes, and is a far more sightly object in a garden than a row of clumsy espalier stakes set up on the old-fashioned plan.



A simple Fruit Trellis.

Trellises of this description may be erected of any height, and the distances between the wires can be regulated to suit all kinds of requirements. Such trellises are very useful for choice Apples, Peaches, and Plums. B.

Immense Peach Crops.—At the annual June meeting of the Peninsular Fruit growers, held at Dover, Delaware, last month, the following estimate of the Peach crop was made by the members present:

Stations.	No. of Baskets.	
	1872.	1873.
Kirkwood.	91,381	none
Mt. Pleasant	304,715	none
Armstrong	136,255	20,000
Middletown	442,614	25,000
Ginn's	46,835	15,000
Townsend	37,600	1,000
Greenspring	44,775	20,000
Blackbird	730	730
Clayton	153,100	100,000
Brenford	78,143	80,000
Moorton	1,798	50,000
Dover	81,305	150,000
Wyoming	55,360	100,000
Canterbury	420	5,000
Bridgeville	14,061	50,000
Greenwood	5,367	30,000
Felton	9,993	19,000
Harrington	17,565	40,000
Seaford	4,605	50,000
Farmington	9,272	20,000
Laurel	10,558	100,000
From Maryland and Delaware R. R.	103,250	203,000
Queen Anne's R. R.	64,493	250,000
Kent Co. R. R.		250,000
Dor. and Del. R. R.	53,259	300,000
Eastern Shore R. R. and connections.	43,973	300,000
Totals	2,067,576	2,183,730

Delaware, so favourable to the Peach, is a very small state lying between Delaware and Chesapeake Bay, and therefore possesses a climate a good deal modified by the sea. The basket contains from 150 to 200 Peaches

Snails on Garden Walls at Bath.—In the neighbourhood of Bath, garden walls are built with stone, and are very much infested with snails, which greatly injure fruit crops on them; consequently market gardeners find it advantageous to pay sixpence a peck for snails to men who collect them in their haunts at night.—W. F.

THE KITCHEN GARDEN.

THE JERUSALEM ARTICHOKE.

(HELIANTHUS TUBEROSUS.)

This is a native of Brazil, not of Jerusalem, and not at all a true Artichoke, but simply a perennial and tuberous-rooted species of Sunflower. It is not so much to instruct people "how to grow" this vegetable that we take it up, inasmuch as even Docks or Nettles are weak compared with its rampant vigour, as that we conceive it to be insufficiently appreciated. The Potato has furnished so many disappointments during the past twenty years or more, that substitutes have been looked for everywhere, and we have had a variety of things offered, from the Chinese Yam to the roots of Oxalises. Now not one of these, taking all things into consideration, has ever approached in value this neglected old plant. To the many it may appear inferior to the Potato in nutritive quality, but analysis has proved that it is so in but a slight degree; and the Potato must be in its best dress and best condition to be more agreeable than a properly cooked and prepared dish of this Artichoke. But when Potatoes, in addition to disease and wateriness, take to super-tuberating, which they often do, then indeed a store of this hardy root becomes invaluable. Where the slightest knowledge of cookery exists there can be no difficulty in serving it up in an agreeable manner; and it would be a boon to the poorer classes of cottage gardeners if this vegetable, and some simple but agreeable mode of serving it, were commonly known amongst them. As regards cultivation, it is often left alone in some by-corner to take care of itself—for it is said that on account of the propensity of every little tuber, or small bit of root, to grow, it is not easy to get the land clear of it when once planted. If systematically cultivated, however, it is as easily and cleanly forked out of the soil, when ripe, as the Potato is, but the frost will not destroy any of the Artichoke tubers that may be left in the ground, or on its surface either, as it would Potatoes. It is an extraordinary cropper, and free from any kind of disease, so that anyone is sure of an abundant crop with but little trouble in the preparation of the soil, and without the application of manure—which this Artichoke does not require. The only insect I ever discovered attacking the Jerusalem Artichoke in summer is the wasp; when these are plentiful, in a hot dry summer, they will attack the succulent stems of the Artichoke, for about a foot above ground, in such numbers that if left alone they will suck them dry, and kill them in a short time. In winter, if within reach of pheasants, they will scratch them out, and so will poultry. To grow them well, solid, and of a nice flavour, a good deep sandy loam, free from trees, is the best. This should be well trenched—that is deeply—in winter, cast up into rough ridges, to sweeten and pulverise, and the bottom of each trench, as cleared, should be forked up with a strong fork and left loose; no manure is required; plant any time in the month of February; choose moderate sized tubers, and place them at the bottom of every alternate ridge—that is supposing the ridges to be two feet apart—and place the tubers two feet apart in each row; tumble the ridges down on them with a fork roughly, to pulverise, and to be hoed or scarified amongst the plants as they appear above ground, keeping a loose, healthy earth surface amongst them by repeated scarifyings, &c. The tubers will soon grow on and take care of themselves; thus, by deep culture and cleanliness, the Artichoke will grow from ten to sixteen feet or more high, producing immense crops, such as no other tuberous-rooted plant will in our climate. They are at their prime for culinary use from the middle of October till March. They are generally boiled, and served up with white sauce; but, in my opinion, they are greatly improved in flavour and solidity by steaming them—a good handful of salt being placed in the water. They are also very good baked in hot ashes, and when cut into slices and fried well in fat, in the same way as Potatoes, they are a very relishing dish. I do not know of any tuber so valuable for feeding poultry and pheasants. In my long practice in their culture I found it best to leave them in the ground where they grew till wanted; after being ripe, cut off the stalks a foot above ground, in order to know where

the rows are, and to prevent the wind blowing away the protecting material, which in winter should be placed a few inches deep all over the surface. This protecting material may consist of refuse leaves, Fern mulch or refuse, and the cut stalks should be laid over it to keep it from being disturbed by the wind. Thus, when severe frost sets in, they are easy to be got at when wanted. Trench them all clean out in the month of February, casting the covering refuse in the bottom of the trenches—planting between each other ridge, as before described, just putting the tubers into the soil deep enough to be covered, and leaving the ridges to be acted on by the weather till the end of March, when they should be tumbled down loosely over them. I never applied any manure for thirty years, although planting every year in the same ground, and the crop was always most abundant, clean, and good. By always trenching and keeping clean, as above described, the ground always produced a heavy return with but little expense or trouble.

The Artichoke is such a certain and heavy cropper, that I often thought that, considering the uncertainty of the Potato crop, a corner planted with Artichokes in every small garden would supply a change at table in winter, and the small tubers would be found useful both for pigs and poultry. Cultivated as above directed, the Artichoke flowers freely every year in August and September, in Devonshire; and, in long dry summers, plants of it are quite gay with their yellow Sunflower-like blossoms.

JAMES BARNES.

LETTUCE CULTURE.

To have Lettuces in good condition, crisp and well blanched, all the year round, requires, in addition to the requisite means and space, a good deal of forethought. One of the greatest aids to good Lettuce culture is a deep rich soil; and it is far easier to make it deep and rich enough in the first instance than to struggle on through a hot dry summer on a poor hungry soil, harassed by the necessity for incessant watering to keep the plants from bolting. The first requisite in Lettuce culture is a well-manured, deeply-cultivated, soil—all other things are, in a sense, subordinate to this—and the next is frequent sowing and planting. Where the demand is regular and constant, a small sowing of two or three sorts once a fortnight from March till September, will ensure a supply, and save a good deal of annoyance. The first spring sowing should be made in February, in a gentle hot-bed if possible; or if the hot-bed cannot be spared, then a box or two may be sown and placed near the glass anywhere, to be gradually hardened off and finally planted out in April. It will succeed the last sowing made in September, and very frequently the finest Lettuces of the season will be produced from this February sowing. Towards the end of June and through July, sow on the north side of a wall, and thin the plants out according to the size of the kinds grown; eight inches apart will be sufficient for Tom Thumb Cabbage Lettuce, whilst the larger kinds of Cos and Cabbage will require ten inches or a foot. Sow in drills, as it gives facilities for frequently stirring the soil with the hoe. The thinnings, if desired, may be planted elsewhere; but if the season is hot and dry, those that have not been transplanted will probably be most satisfactory. When hot dry weather sets in, mulch with rotten dung, if possible, between the rows, laying it nearly up to the plants. A very great thickness will not be necessary; two or three inches at the most will be sufficient. This mulching saves a deal of labour in watering in a dry summer. In fact, without mulching, on some soils watering is worse than useless; it encourages, during the time the effect of the water remains, the production of fibres near the surface, and if the water is neglected for even a short time these fibres perish. Far better will it be on hot soils, if mulching cannot be resorted to, to deepen the soil in every possible way, keep the surface loose by frequent hoeing, and discard the waterpot altogether, unless a regular and constant supply can be given. But when plants are mulched, a watering once a week or so washes the soluble portions of the manure down to the roots, and pushes on the plants rapidly. The last autumn sowing should be made about the middle of September, on a warm south border, to stand in the seed-bed over the winter, as it frequently happens small plants survive

a severe winter when larger ones perish. Lettuces required for late autumn or winter salads, when nearly full grown, are very easily injured by frost. There are many ways of protecting them, and perhaps the best is to lift them carefully with balls, and plant them under frames. Lettuces can easily be forced, and where good winter salads are in request and ample means allowed for their production, there is not the slightest difficulty about it; in fact, there is no reason why some of the skill and energy devoted to forcing early Potatoes, Carrots, &c., should not be diverted to Lettuces and Cauliflowers, both of which are good subjects for forcing, and will repay any care bestowed upon them. It seems generally admitted the French can beat us in the production of early Lettuces; but they have a better climate, and, in addition, they have the sense to grow their winter and early spring Lettuces under glass. I am convinced we have a wide field open for improvement in our Lettuce culture. The best Lettuces I ever had were from a very early sowing in heat, afterwards transplanted to another bed under glass; and I am sure the money value of a crop of Lettuces was equal, if not superior, to the same space occupied with Potatoes. When I had to furnish winter salads largely, I had a four-light pit that had two 3-inch hot-water pipes along the front. This pit, with others, was filled with leaves, and was used for forwarding early Strawberries, and afterwards it came in for various uses during the summer. Early in October the bed of leaves was turned out, and, if dry, watered, made firm again by treading, and about ten inches of good soil placed on the top, which brought up the surface to within fifteen or eighteen inches of the glass. The soil was allowed a few days to settle, and the pit was then planted with the most suitable sorts of Lettuces. There was a very gentle bottom heat, and the pipes could be used when necessary. The growth of the Lettuces was always rapid and clean, and beautifully crisp and white when tied up for a short time. In our cold, wet, foggy climate, Lettuces under glass in winter are sometimes attacked by mildew; but where there is the command of the least amount of artificial heat to keep the air in motion and dispel damp, there is not much trouble from mildew.

E. H.

RADISHES.

As it appears to be now almost impossible to meet with an eatable Radish in London, if one may judge from the tough or honey-combed specimens which are served up at our best dining-rooms and restaurants, we have thought it may be useful to describe the mode of culture pursued in France, by which one may any day in the year enjoy a fresh, crisp, and juicy Radish at Paris. In doing so we shall repeat the instructions of M. J. Ponce, of Clichy-la-Garenne, one of the most distinguished Parisian market-gardeners. The varieties of Turnip Radishes most in favour are: The Scarlet, which is the best of all, as it does not run away to leaves when grown in hot-beds; when grown in the open air it does not become hollow so soon, and a crop can be gathered for a longer time. During summer the White-tipped variety is preferred. Other kinds grown are the early Rose, the White-tipped, the round Violet, the early Yellow, and the White. Of the long Radishes, the White, early Violet and Rose, and the Black are the principal kinds grown by market-gardeners. Radishes are sown all the year round, and mostly along with other crops; sometimes they are sown alone in drills during summer, and in raised sloping beds in spring and autumn. The spring sowings should be covered with mats, and should commence in January; the last sowings are made about the 9th of October. The frames are first placed, then the seed is sown, and as soon as the frosts appear, the lights are put on, and covered with mats if the frost is very severe. These Radishes are brought to market before those which are sown in hot-beds in December and gathered in February and March. They are sown along with Carrots, and care should be taken to give them air as soon as they have begun to grow. Sowings, in hot-beds under frames and cloches, and in the open air, are continued in January and February, always in conjunction with Carrots. Air is given as soon as it may be done without danger, and they need not

be covered with mats except in frost. Beds in the open air are covered by spreading the mats flat on them, but should there be in the same bed any other plants to be sheltered, such as Lettuces, the mats should be raised and supported on stakes or a trellis. If there are no such plants, the Radishes will not be injured by the mats lying flat upon them. They are sown in the open air in beds sheltered by walls at the end of January and in February; in March in the open ground of the garden (always with other crops), and successive sowings are made during the summer. The Turnip Radishes require a good layer of spent manure; the deeper it is the finer and longer the radishes grow. If sown by themselves, it should be in drills. They require abundance of water. In summer, a crop should be gathered twenty or twenty-five days after sowing. Black Radish is sown broadcast in June, along with other kinds of Radish, and in the beds an interplanting may be made of Cos or Cabbage Lettuces. As soon as the Radishes are well up, the Lettuces should be cleared off. This crop of Radishes comes in in autumn. Those intended for winter sale are taken up and laid in a trench, the dead leaves having been previously removed. During frost they should be covered with litter. Two kinds are grown, viz., the Violet de Gournay and the Black. Seed is obtained from plants sown in spring, in a bed sheltered by a wall, and transplanted into a prepared bed, at a distance of 8 or 10 inches from each other. They run to seed rapidly, and when quite ripe the plants should be pulled up and hung on poles or trellises to dry, or they may be left on the ground, care being taken to turn them occasionally. The seed is threshed out, and keeps good for five years.

SORREL.

THIS is so much used wherever French cookery exists, that it is in no danger of falling into the abyss of things forgotten, like many of our old garden herbs. Being all hardy perennials, the simplest need no instruction as to the culture of Sorrels, but the kinds differ a little. There are three species cultivated—the common Sorrel (*Rumex acetosa*), a native of Europe and Asia, from the Mediterranean region to the Arctic circle, and also of the southern hemisphere; the French Sorrel (*R. scutatus*), a native of continental mountains; and the mountain Sorrel (*R. montanus*), from the same region. The varieties of the first mentioned kind are those most grown in our gardens, that known as the Belleville Sorrel being most esteemed. Near Paris, where large supplies of Sorrel are grown for market use, the Oseille Large de Belleville is the kind most generally grown. The round or French Sorrel is a trailing perennial of a rather glaucous hue, growing anywhere, not appearing so welcome to slugs, nor running to seed so fast as the other kinds, and producing a large quantity of leaves. We have always thought these more agreeable in flavour than the leaves of any other variety of Sorrel cultivated. Of *Rumex montanus* there are two good varieties—the Oseille Vierge and the variety with blistered leaves, *O. Vierge à feuille cloquée*. Sorrel is chiefly sown in spring, either in drills or broadcast; the latter mode is to be preferred in market-gardens, as it will grow almost as thickly as in drills, and Radishes or Spinach may be sown among it, and Cos or Cabbage Lettuce may be interplanted. However, if an earlier crop is desired, it should be sown alone. It may also be sown under frames among Cos and Cabbage Lettuces. These sowings may be made up to July, but the spring is the best time. The large-leaved kind, called de Belleville, comes in in May, and of it two or three gatherings may be made. It requires a great deal of water. In autumn, a good mulching of spent manure is given, and, after two or three gatherings in spring, the bed is run out. Manure and mulching are the two essential points in growing this plant.

The Oseille Vierge, or Virgin Sorrel, is planted in borders in spring. It lasts for a very long time, and never runs to seed, whence its name. It is only grown in kitchen-gardens. Sorrel is grown in hot-beds in the following manner: It is sown on sloping beds in spring. These beds are $4\frac{1}{2}$ feet wide, and alleys 16 inches wide are left between them. Other vegetables are grown in these alleys, which should be cleared out by November or December. At this time a foot or 16

inches deep of soil is removed, and a good layer of spent manure put in, then the frames are placed on the beds and covered with their lights; finally the alleys are filled with good mixed manure, which should be stirred up from time to time. Instead of thus forcing the Sorrel as it grows, it may be planted out on hot beds covered with 6 inches or 8 inches of soil, or decayed Sorrel plants which have been thinned out. After two or three gatherings, the beds may be broken up. These beds require the same treatment as other beds. To obtain seed, a number of plants are allowed to run in spring. The seed is gathered in July. It keeps good for two years.

BORAGE.

THIS, although usually considered a native plant, is more probably a naturalised one, its native home being the eastern shores of the Mediterranean. It is a vigorous annual plant, which there can be no trouble whatever in cultivating. It often comes up from self-sown seeds, and may be sown at any time, though it will be most convenient to do so with the general crops in March, and in drills a foot or 15 inches apart. If a succession is wanted, it may be sown at intervals of six weeks from March to August. Seed may be saved by cutting the heads off the plants before the greater number of seeds are ripe, and placing them on a newspaper or piece of cloth in a dry shed or room; but this is not worth while, as the seed is so cheap. Being a vigorous plant, it might be readily naturalised in some half-wild spot, and this might suit those who forget to sow such small crops.

In Devon it is to be found among the corn crops everywhere—too much of it in many places to be profitable; however, the flowers are of a beautiful and interesting blue colour. The young shoots or tops are sought for use, just as the first blossoms are opened, by the housekeeper, butler, and confectioner for making various cup drinks and flavouring and colouring other things.

J. B.

THE BATH COS LETTUCE.

IN private gardens about Bath, many sorts of Lettuces are grown, but for market purposes the Bath Cos is almost the only variety cultivated, either for winter or for summer use. Growers for market are, however, fully aware that the variety of the White Paris Cos, generally known as the London Cos, is the best summer Lettuce in cultivation, owing to its adaptability for being transplanted, its reluctance to "run," its excellent quality and fine colour; but about Bath no kind sells so readily as the Brown Cos. No wonder then that it has obtained the name of Bath Cos. It is an excellent Lettuce, however, and the best Cos that we have got for standing the winter, and if bound round with a wythe or piece of matting, when nearly fit for use, it forms a large fine heart of beautiful white crisp leaves, with pinkish mid-ribs. The sowings between August and December are made on beds, and the young plants are transplanted where they are to remain, but the spring and summer sowings are made where the plants are to stand till they are fit for use, in rows from 16 inches to 18 inches apart, and the seedlings are thinned out in the row to a foot asunder. In this way, and by a careful selection of seed, the plants seldom "run," and are had in use throughout the whole summer. Indeed, various fields which I inspected in the last week of June, although the produce was fit for use, presented a uniformity and freedom from seeding plants, not exceeded in the greener-leaved sorts. As a summer Lettuce, it is, however, rather unaccommodating, inasmuch as we cannot safely transplant it when necessary, and use it as a catch-crop in the same way as we do the Green Cos Lettuces.

W. F.

Transplanting Vegetables.—Instead of following the customary plan of transplanting vegetables after rain, and while the ground is wet, transplant while the weather is dry. First make the holes where the plants are to go, then put the plants into them; fill up with water, and pour in dry earth; you will thus avoid the baking and hardness which you are sure to have by working the soil while wet, and that takes the plant from a week to fifteen days to get through before it begins to thrive. I follow this mode always, and by planting in the evening I can leave even Tomatoes without covering in this climate, and will not lose 2 per cent.—T. B. PENDLETON, in *The New York Tribune*.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—The late rains have considerably impaired the beauty of Pelargoniums and Roses, as well as the blooms of other kinds of plants; therefore remove the worst of them, as well as any decaying leaves that may happen to be on the plants. Pelargoniums, Verbenas, Heliotropes, and similar plants, are now growing fast, and consequently require constant attention in the way of pegging down; any side shoots that can be spared should be used for purposes of propagation. The finest plants of Lobelias, and the best coloured ones of Phlox Drummondii and Stocks should be selected for seed; a common cool frame is best for them, and they should always be fully exposed, except in the event of heavy rains.

The Indoor Garden.—In conservatories, thinning growing shoots, training, tying, and staking, giving abundance of water to growing plants, syringing Evergreens not in flower once a day, introducing fresh flowering plants to replace exhausted ones, and maintaining neatness and cleanliness throughout the structure, constitute the chief operations at present. Plants of *Solanum Capsicastrum* for winter decoration are now in flower, and are best kept in open frames or plunged in the open air. Balsams for late blooming should likewise be kept in open frames, and their flower-buds should be picked off as they appear until a fortnight before they are required to flower. The Currant Tomato makes a pretty ornament for the conservatory and may now be propagated by means of cuttings. Keep up a succession of tender annuals for autumn decoration, and re-pot some of the Zonal Pelargoniums that bloomed in spring and that were cut back in May; they will make nice autumn-blooming plants. Have a good stock of healthy *Selaginellas*, *Isolepis gracilis*, *Panicum variegatum*, *Torenia*s, and young Ferns, for intermixing with *Achimenes*, *Plumbago capensis*, *Eranthemums*, *Justicias*, *Cyclamens*, *Primulas*, and other late blooming plants. Many plants can be made to flower late by starving them in summer, keeping them late before they are started, pinching them, growing them in a cooler temperature than that in which they are wont to be grown, and by having a young stock suitable for late flowering. Feed Japan Lilies with manure-water until they are about to expand their flowers, but when they begin to bloom give them pure water only. Pot singly rooted cuttings of greenhouse hard-wooded plants in order that they may become established before winter.

MARKET GARDENS.

Green crops, such as Cabbages, Cauliflowers, Lettuces, &c., have been excellent this summer. Vegetable Marrows are growing fast and bearing freely; but want of sunshine is much against the fruiting of Cucumbers. French Beans and Tomatoes are very promising; Celery, too, looks well, and is making rapid progress. The planting out of Coleworts now constitutes the principal work in the vegetable grounds, and the gathering of bush fruits in the fruit gardens. Currants and Gooseberries, as well as Strawberries, are an excellent crop, and Apples look well, but Pears and Plums only moderately so.

Asparagus.—The growth of this must now be encouraged by keeping the surface soil of the ridges well loosened and clean. Cutting must in every case be discontinued.

Beet, Carrots, and Parsnips.—The latest crop of Beet should be finally thinned; the ground amongst all three should be frequently hoed, and such plants as "run" should be at once removed.

Cabbage and Colewort.—All autumn-sown Cabbages will be mostly removed for market, and early spring sowings will be coming into use. Of Coleworts, the Rosette is the best for early purposes, as it comes into use after the bulk of Peas and French Beans, &c., is over; it should be succeeded by Cock's Hardy Green, which stands the winter better than the Rosette. The Rosette should now be planted in ground cleared of Lettuces, Spinach, Cauliflower, Cabbage, &c., in rows lined off every 30 inches apart, intermediate lines being planted between these. As the ground should have been well manured and trenched in the autumn, it will only require digging, rolling, and lining now.

Cauliflower and Broccoli.—All the autumn sowings of Cauliflower will be exhausted by the middle of the month, and those sown in February and March in frames will be coming into use, and they in their turn will be succeeded in the end of the present and during the next month by March open air sowings. Clear off all leaves and stumps and convey them into the manure heap. Transplant late Cauliflowers into a moderately cool, moist, and shady piece of ground. Snow's Winter White, Walcheren, and Early Sprouting Broccoli, must have intervening crops removed as soon as possible. The ground should be kept hoed and clean, and, if desirable, the plants may be earthed up. Some are very partial to the earthing up of crops, while others are, on the contrary, against it.

Brussels Sprouts, Savoys, and other Greens.—Brussels Sprouts, should by this time, have made good progress, and Potatoes should be removed as early as convenient to permit the Sprouts to have more light and room. Transplant a few more for a late crop. Main plantations of Savoys should now be planted; they do well after Potatoes, and may be intercropped with Lettuces. Transplant Curled Kale, and other odds and ends, whenever ground can be conveniently spared for them.

Celery.—Transplant the main crop in rows 5 feet apart, and about 8 inches asunder in the row. Water the plants abundantly at the time of transplanting, and afterwards when necessary during their growing season. Some shorten the leaves a little at planting time in order to prevent the plants from flagging; others have a great objection to this practice, which they assert weakens the plant.

Cucumbers.—These fruit best in moderately sunny seasons, when a little shading in the way of litter should be thinly strewed over the glass, or a thin spattering of whitewash used; but, in dull seasons, a temporary shading is decidedly the best, and even that must not be too freely applied. Cut away old leaves, stop laterals at every joint where a young fruit is formed, cut away badly crooked fruits, and endeavour to straighten those not too much bent by putting them, when in a young state, into long glasses. Thin the leaves and shoots once a week at least, and cut marketable fruits three times a week. Water abundantly with water that has been exposed to the sun and air for at least a day before it is used, and employ liquid guano as a stimulant. Ventilate freely during the day time; but shut up at night. Keep down woodlice by means of toads and otherwise.

French Beans and Scarlet Runners.—The French Beans which have been raised in frames should be in good bearing condition from the 1st of the month. The earliest outdoor crops should produce their first crop about the 20th, and the latest sowing should have been made about the beginning of this month or last week in June, according to circumstances. Scarlet Runners should be topped so as to induce them to flower freely, and to branch out and cover the ground. Market gardeners find that Scarlet Runners do not pay for staking, because in that case they require to be almost double the distance from row to row they otherwise would be, and stakes permit drought to affect the roots very severely; whereas, when grown in a dwarf state, their progress is rapid, and they spread out and protect the soil from becoming too dry by their thick mass of leaves. If grown for staking, they require to be in rows six feet apart; but if dwarf, from 3 feet to 4 feet is the ordinary distance between the lines.

Leeks, Onions, &c.—Transplant the residue of Leeks, if necessary; but if they are to remain where they have been sown they must be thinned. Spring-sown Onions will now require a third cleaning. Maintain a supply of young Onions for salading, by means of occasional sowings on a moist piece of ground.

Lettuces.—Continue to tie up, and remove for market all plants as soon as ready. Transplant some on ridges between Celery rows, as catch crops; also between young French Beans, Savoys, and wherever blanks occur amongst other crops.

Seakale.—This must now occupy all the space devoted to it; the amount of suckers on old plants must be kept reduced to three or four of the strongest, and all flower-stems must be cut away, unless seed saving is an object.

Spinach.—If the weather is mild and moist, good crops of the round-leaved kind may be obtained from shady places, but if the weather be dry and sultry, the plants run to seed almost immediately after they germinate.

Turnips and Radishes.—Sow broadcast a main crop of Turnips for late autumn and winter use, and thin out the plants a little at first, but afterwards the removing of the strongest for market now and then will be thinning enough.

Tomatoes.—These should be set and considerably advanced by the end of the month, and, in order to do them justice, all useless laterals and leaves must be removed. The plants should be tied on the sunny side of the stakes so as to expose the fruit as much as possible, and the tops of the plants should be pinched out as soon as the fruit has set. Draw up some soil around the roots in the form of a basin for the retention of water, which must be liberally supplied, and, if the weather be dry, a mulching of rotten manure over the soil in the vicinity of the roots materially benefits them.

Vegetable and Custard Marrows.—These should now be growing luxuriantly and fruiting abundantly, and if the weather be dry they should have a large supply of water given to them occasionally. By mulching the ground about them as soon as the inter-

crops are removed the natural moisture is preserved, and the fruit is kept clean. Lay pieces of bricks or slates on the advancing Vines, or peg them to the ground so as to cause them to root at their several joints, and thus contribute additional nourishment to the plants. Cut the fruits regularly and before they get too large, and do not permit any to remain for seeding purposes until next month.

Fruit.—This is the month for bush fruits as well as for Strawberries, and consequently protection from birds is an important point. Gather Currants before they get too ripe, as they travel better than when left too long, put them into quarter-bushel and half-bushel baskets, and cover them with Rhubarb leaves fixed in position by means of pieces of stout Willows. Uproot and destroy all useless bushes, and dress spring grafted trees. Place some soil amongst the shoots of layered Gooseberries and Currants, and bud stone fruits.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

JULY 16TH AND 17TH.

THIS exhibition, which was somewhat extensive, consisted chiefly of different kinds of Pelargoniums; but hardy herbaceous plants and miscellaneous contributions were also present in considerable numbers. The competing classes were arranged in the arcades at each end of the conservatory, and the new plants were, for the most part, in the council-room.

Zonal Pelargoniums.—In the class of eighteen of these in 6-inch pots, Mr. J. George, Putney Heath, was first with extremely fresh and well-bloomed small plants. Among the scarlets were Edward Bennet, a very fine seedling, with a conspicuous white eye; A. F. Barron, bearing very large trusses and finely-formed blooms; Queen's Messenger, having immense trusses; Celebrity, Luna; La Grande Marque, with a fine globular truss; Jarnac, good in habit; Congress, having a large truss of cerise flowers; Anber, Lord Lonsborough, Comus, Paladin, and Rosy Queen. Amongst the others were Circulator, a free-blooming peach-coloured sort; Polly King and La Belle Blonde, two free-blooming blush-coloured kinds; and Lucretia, with large trusses of white flowers faintly shaded in the centre with rose. Messrs. Bell and Thorpe were second with excellent varieties; and Dr. Denny, Stoke Newington, was third. For twelve nosegay and hybrid nosegay sorts, Mr. George was again first. Amongst his scarlets, The Shah was particularly fine, the flowers being excellent in form, as were also those of Lustrous, Foxhunter, Teresa, and Flame. Grande Coupe, Lilacina, and Vivid with rosy cerise-coloured flowers, having very large trusses; J. C. Fox and Virgil, salmon-coloured; and Reine, a free-flowering pretty lilac-pink sort. Mr. H. Cannell, of Woolwich, was second with well flowered plants of choice sorts. For good habit, freedom of flowering, and size of trusses, Mrs. Flytch, Mrs. Holden, Florence Durand, Mrs. F. Burnaby, and Matilda were particularly fine in the rosy-lilac section, and Undine and Frank Miles among scarlets. Mr. J. Goddard, of Twickenham, was third with very nice plants. In the class of six specimen plants of florist's varieties of zonal Pelargoniums, Mr. J. Catlin, gardener to Mrs. Lermite, East End, Finchley, was the only exhibitor. His plants measured some 4 or 5 feet through, were trained on the flat principle, and were densely furnished with flowers. The varieties were Leonidas and Lord Derby, scarlet; Mrs. Rendatler, pale salmon; Prince of Wales, rosy-salmon; Pioneer, salmon; and Virgo Maria, pure white. For six specimen plants of zonal nosegay Pelargoniums, Messrs. Bell & Thorpe were first with extremely well bloomed plants. In the class of twelve double-flowered zonals, the same firm were again first with well-flowered plants of Victor Lemoine, Charles Glynn, and W. Pfitzer, as scarlets; Marie Lemoine, Madame Gebhard, Miss Evelyn, and Madame Boutard, pinks; and Cygnet and Mrs. Gladstone, rosy-pink coloured sorts. In this group were Ville de Paris and Heroique de Strasbourg, the latter with very double curiously coloured blooms, the upper side of their petals being scarlet, and the under side whitish, giving to the flowers when open a sort of variegated appearance. In this collection was also the double-white Pelargonium of which we have heard so much, but which is a very inferior sort. Messrs. Wright, Turner Road, Lee, Kent, were second in this class with very nice clean plants, but they had run a little too much to foliage.

Tricolor Pelargoniums.—In the class of eighteen golden tricolors Mr. T. Pestrige, the Greenway Nursery, Uxbridge, was first with nicely coloured and bright-leaved plants of the following, viz., Sophia Dumaresque, Mrs. Headley, Prince of Wales, Mr. Rutter, Lady Cullum, Peter Grieve, Salamander, Florence, Mrs. Turner, Sir Robert Napier, Acme, Mrs. Dunnett, Achievement, Vale of Evesham, E. R. Benyon, Brilliant, Lucy Grieve, and Sophia Cusack; Mr. B. H. Smith, Ealing Dean Nursery, Ealing, was second; and Messrs. Wright third. In the amateurs' class of nine kinds Mr. R. Watson, Airlie Lodge, Surbiton Hill, was first with Prince of Wales, Sir R. Napier, Sophia Dumaresque, Lady Cullum, Mr. Rutter, and Jetty Lucy; Mr. Goddard, Twickenham, was second; and Mr. Goddard, the Retreat, Richmond, third. In the class of six silver tricolors Mr. T. Pestrige was first with Lass o' Gowrie, Miss Burdett Coutts, Mrs. Rousby, Mrs. Colonel Wilkinson, Italian Beauty, and Charming Bride; Mr. H. B. Smith was second; and Messrs. Wright third. In the

amateurs' class of four, Mr. J. Beach, Riverhead, Sevenoaks, was first, Mr. Goddard, Twickenham, second, and Mr. Watson third.

Golden Bronze Pelargoniums.—These were altogether very handsome, and the zones distinct and bright. Mr. T. Pestrige was first in the class of six, with Black Douglas, W. R. Moray, Earl of Rosslyn, Crown Prince, Reine Victoria, and Sybil; Mr. Watson was second with Sybil, Plutus, Prima-donna, The Moor, Nobilis, and Decorator; and Messrs. Wright were third.

New Pelargoniums.—For three plants of the new zonal Pelargonium, Mr. G. Smith, New Villa, Hedge Lane, Edmonton, was first, with Santley, a kind having very large finely formed scarlet flowers, with a white eye; and third with Mrs. G. Smith, a compact-habited, salmon-flowered sort. Mr. George was second with Mrs. J. George, having exceedingly large rosy-salmon flowers. In the class of three plants of a new nosegay or hybrid Pelargonium, Messrs. Bell and Thorpe were first with Happy Thought, a pretty variegated sort, blotched in the middle of the leaf with yellow like an Aucuba. For three plants of a new golden tricolor Mr. T. Pestrige was first with Mrs. H. Little, a robust, well-defined sort; and Mr. C. Turner, of Slough, third with Miss Morris, a rather dwarf, but very dark-leaved kind. In the class of three plants of a new silver tricolor, Mr. Turner was first with Dolly Varden, a particularly pretty variety, the fiery-red variegation of the leaves being very prominent; Mr. Pestrige was second with Mrs. J. Marshall. For three plants of a golden-leaf Pelargonium, Mr. T. Pestrige was first with Golden Banner, a compact habited, bright-leaved sort; and Messrs. Bell and Thorpe were second with Sulphureum. In the class of three plants of a double-flowered Pelargonium, Messrs. Bell and Thorpe were first with Alice Crousse, a whitish-pink sort; and Messrs. J. Carter & Co., second with a very pretty rosy-purple bloomed sort.

Miscellaneous Prizes.—Prizes were offered by Mr. Cannell, of Woolwich, for half a dozen zonal Pelargoniums not in commerce, and in this class Mr. George was first with La Grande Marque (a kind having large trusses of scarlet flowers); A. F. Barron (one of the finest of scarlets), Edward Bennet (a good scarlet, with a conspicuous white eye), Lord Lonsborough (very large scarlet-cerise), Celebrity (large trusses of scarlet blooms having dark crimson veins), and Mrs. J. George (a free-blooming variety, with very large trusses of rosy-salmon flowers). Messrs. Bell and Thorpe were second in this class with Polyxenes (a good scarlet), Edward Bennet (a rosy-salmon kind, quite different from the one shown by Mr. George under the same name), Wood Nymph (rosy-lilac), Miranda (white, shaded with rose), Czarina (like the former, but whiter), and Heroine (a sort having a pale salmon colour). Mr. Pearson's prize for twelve varieties of Pelargoniums sent out by him, and grown with as little training as possible, brought together a number of very fine plants, remarkable for the size of their flower-trusses. Mr. Birse, gardener to J. H. Lermite, Esq., Finchley, was first; and Mr. J. Catlin second. Amongst these the best sorts were Corsair (a grand scarlet), Amaranth (a rosy-lilac), and Mrs. Hole (a free-flowering salmon shaded with violet, and bearing immense trusses), Shakespeare, Charles Burrows, Lady Louisa Egerton, F. Bradley Bayard, and Florence Durand were also particularly fine. For Dr. Denny's prize for a collection of his seedlings, sent out by Mr. Wm. Paul in the spring of 1871, Mr. J. Scott, of Enfield, was first, and Messrs. Bell & Thorpe second. Conspicuous among these were Sir C. Napier, Wellington, Diana, Ianthe, Iago, and Sir J. Moore. For Mr. G. Smith and Mr. J. George's prize for twelve varieties of Pelargoniums raised by Mr. George, Mr. E. Rowe, The Rookery, Roehampton, was first, and Mr. Goddard, Twickenham, second. The sorts consisted of florist's and nosegay varieties, amongst which Dr. Livingstone, Master Harry, Magnificum, Polly King, Craven Fox, and King of the Forest, were the most striking.

Hardy Herbaceous Plants.—These formed an important part of the exhibition. Mr. R. Parker, Tooting, was first, and Mr. T. S. Ware second. For Pentstemons Mr. Porter, Syon Lodge, Isleworth, was first, and Mr. T. S. Ware second. For a dozen cut blooms of Carnations Mr. Turner was first; Mr. Norman, 98, Crescent Road, Plumstead, second; and Mr. Pizzey, Fulmer, Slough, third. For Picotee blooms, which were very beautiful, Mr. Turner was first, and Mr. Norman second. Mr. T. S. Ware exhibited a miscellaneous collection of Picotees and Carnation flowers, and a good half dozen plants of Delphiniums; also a choice group of miscellaneous hardy herbaceous and Alpine plants. The same exhibitor was first for half a dozen Lilies, with Croceum, immaculatum, excelsum, aurantiacum, longiflorum, and auratum; Mr. C. Turner was second for Lilies.

Miscellaneous Plants, Flowers, &c.—Mr. Wm. Paul, The Nurseries, Waltham Cross, exhibited a large collection of Zonal, Nosegay, Tricolor, and Bicolor varieties of Pelargoniums, all particularly fine. Amongst them were the white variegated-leaved Mont Blanc (with good trusses of white flowers), Marquis (a fine scarlet), Argus (a brilliant scarlet), Rosy Morn, Paul Pry, &c. Mr. J. Laxton, Stamford, exhibited some cut blooms of double-flowered Zonal Pelargoniums, amongst which Aurora, Jewel, E. J. Lowe, and Aglaia were particularly fine. Of Spiræa palmata, Mr. C. Noble, of Bagshot, exhibited nine of the finest specimens ever seen. They were large plants, and were in the most luxuriant condition as regards foliage, each plant being furnished with about a dozen splendid branched spikes of beautiful rose-coloured flowers. Messrs. Barr & Sugden exhibited a fine collection of cut blooms of Lilies, Amaryllis, Tritonias, Irises, and other bulbous plants. From Mr. Keynes, of Salisbury, came some stands of Rose blooms, all in magnificent condition; and from Mr. Turner, Slough, came blooms of Verbenas, amongst which the Prince of Wales, a scarlet, was particularly fine. Mr. Speed, of Chatsworth, showed a flower spike of Alpina nutans, and Mr.

J. Aldous, Florist, Gloucester Road, South Kensington, exhibited a large group of miscellaneous plants, consisting of *Dracanas*, *Aracarias*, *Yuccas*, *Araceas*, *Palms*, *Pelargoniums*, *Fuchsias*, *Ferns*, and several other plants suitable for furnishing purposes. Messrs. Bell & Thorpe exhibited a large quantity of their Shakesperian Imperishable Labels, and from Messrs. Banting, 27, St. James' Street, came specimens of flower stands decorated with imitation flowers and fruit.

Fruit and Vegetables.—Mr. Geo. Westland, Witley Court, exhibited four splendid Queen Pines; and Mr. Harris, Singleton, Swansea, and Mr. Ward, Bishop's Stortford, showed fine examples of the same fruit. Several varieties of fruits from seedling Strawberries were shown by Mr. R. H. Postans, Rentwood, and some of them were highly approved of by the fruit committee. Mr. William Paul, of Waltham Cross, showed samples of Waltham Seedling Strawberry—a somewhat small-fruited sort, of excellent flavour, firm flesh, and very prolific; consequently, it promises to be an acquisition for preserving purposes and for safe transmission from one place to another. Mr. Farrow, Brigadier Hill House, Enfield, showed a bunch of Golden Drop Grapes; and Messrs. Standish and Co., Ascot, two clusters of the Ascot Citronelle. Mr. J. Scott, Bridgen Hall, Enfield, showed some fine Noblesse Peaches. Mr. Child, New Ferry, Birkenhead, Mr. Johnston, Glamis Castle, and Mr. Stevens, Wray Park, Enfield, showed fruits of hybrid Melons. Mr. Bennett, of Hatfield, showed shoots of Peaches and Nectarines from the open wall, laden with fruit; and Mr. F. Dancer, of Chiswick, exhibited examples of Monarch Goseberry, bearing a prodigious crop. Mr. C. Piccarille, Wigmore Street, sent fine samples of the Giant Naples Onions; and Mr. C. Osman, South Metropolitan District Schools, Sutton, Surrey, contributed several varieties of Lettuces.

First-class Certificates—These were awarded to the following:—

Zonal *Pelargonium* Edward Bennet (George), an extremely fine scarlet, with a conspicuous white eye.

Zonal *Pelargonium* A. F. Barron (George), one of the finest of scarlet flowered sorts, the trusses as well as the individual blooms being of a remarkably large size.

Zonal *Pelargonium* Lustrous (George), very brilliant scarlet.

Zonal *Pelargonium* Mrs. George (George), a very fine rose-coloured kind, immense trusses.

Zonal *Pelargonium* Czarina (Bell & Thorpe), white, shaded with rose.

Nosegay *Pelargonium* Princess (Wm. Paul), a fine compact variety, with large trusses of rosy lilac flowers.

Zonal *Pelargonium* Remus (Wm. Paul), a stubby growing plant producing compact trusses of well-formed white flowers shaded with rose in the centre.

Pelargonium Mrs. Carr (Bell & Thorpe), a white variegated-leaved sort, with double flowers.

Clematis Guiding Star (Cripps), a dark purplish-violet flower, with a brilliant band down the centre of the petals.

Clematis Louis Van Houtte (Cripps), a deep violet-blue, very finely formed flower of the lamiginosa section.

**Scolopendrium vulgare* var. *Williamsii*, a beautiful tassellated or very much crested form.

**Gloxinia* Grand Monarch, a very pretty large flower of a purplish-violet colour.

Phlox Miss Robertson (Cocker), a very pretty pure white variety, of moderately dwarf habit.

**Coleus* (Kimpion), a very robust variety with large yellow leaves, distinctly veined with purplish-crimson.

Lilium Krameri (G. F. Wilson), a tall growing sort with large pinkish flowers.

Azara microphylla (Veitch), a pretty hardy evergreen shrub from Chili, suitable for covering outside walls.

Lobelia Charity (Carter), a very dwarf sort, with rosy purple flowers.

Rose H. P. Empress of India (Laxton), a good dark crimson, very double-flowered sort.

Clarkia integrifolia limbatata (Carter), a fine crimson-flowered sort, with a distinct white margin; a very beautiful and desirable annual.

Dipladenia Brearleyana (Bull), a fine strong-growing sort, with large clusters of showy crimson flowers of good substance, the flowers at first opening being pink, but eventually changing to a deep crimson; a grand plant.

Rose H. P. Beauty of Thame (Walker), a very dark crimson flower of a fine cup shape and velvety texture.

Rose H. P. Reynolds Hole (Paul & Son), a most beautiful dark crimson velvety Rose; indeed, one of the finest Roses which we possess.

* Much inconvenience is experienced at these meetings in obtaining the names of the exhibitors of new plants, and sometimes even the names of the plants themselves, which are all marked with numbers. Surely exhibitors should take care that their names, as well as those of the plants, are properly affixed, as under the present arrangement it is impossible to discover whose plants they are, or what they are, without reference to the Society's books. This remark applies to those plants marked with an asterisk in the list just given.

The Colouring-matter of Leaves.—The coloured solutions obtained from leaves are very complicated mixtures. It is not at all unusual for them to contain as many as ten different coloured substances. The progress of our knowledge has to a great extent depended upon the application of improved methods, which have made it possible to distinguish the various constituents of these mixtures. Stokes said that his researches had led him to conclude that the chlorophyll of land plants is a mixture of four substances, two green and two yellow, and I have shown that by the newer and improved methods it is easy to prove that there are not only these two green substances, one a blue-green and the other a yellow-green, having perfectly distinct and characteristic properties, though confounded together by nearly all others experimenters, but also four or even five perfectly distinct yellow substances.—H. C. SORBY, *in Nature*.

GOVERNMENT COMMISSIONS AND THE POTATO DISEASE.

ON perusing THE GARDEN, the other day, I was surprised to find that the Highland Agricultural Society are about to memorialise the Government to appoint a Royal Commission to investigate the causes (should it not be cause?) of the ever-recurring Potato disease. Now, with all due deference to the society in question, I must express my opinion that unless a very different course is taken in looking for the cause than that pursued by a former Commission which the Government sent to Ireland some years ago, and which it was said cost the country £9,000, the results will be, as on that occasion, *nil*. So long as scientific men look to symptoms, and try to find a cure for the disease through investigating them, instead of diving deeper into the matter and searching for the cause alone, their investigations will never be successful. Last year, on the 10th of July, a dense muggy fog passed over the land, and the next day all the Potatoes were cut off. In 1871, on the 9th of July, exactly the same state of the atmosphere existed, and with even more fatal results than in 1872. The first symptoms of disease that occurred in the Potato, as well as I can recollect, were in 1831, when what we call "curl" manifested itself to a considerable extent, and was followed by the Potato producing young tubers under the ground without throwing up any haulm. In 1832 these symptoms became more alarming; and now, in 1873, I have to declare that we are just as far from being able to cope with the disease as we were when it first made its appearance. My own observations have led me to adopt the atmospheric view of the case, and if I am correct, then no investigation of symptoms can be of use in checking the disease, except so far as they may enable us to place the seed in the most favourable condition for resisting atmospherical influence, by draining, and otherwise placing the roots in such soils as will most rapidly mature the stems and leaves, so as to render them less liable to attack. During this past week we have had just the sort of weather necessary to prevent disease—a brisk drying wind, with sometimes bright and warm sunshine. Whilst such a state of the atmosphere continues I have no fear of disease; but let it change to a close warm fog, and then look out the next day, and see where the Potatoes will be. To me there can be nothing clearer than that atmospherical changes cause the disease. When, however, I advance an opinion that these are the cause, I am met with the question—Why was it not so before 1830? Well, all that I can answer is that our seasons have changed and are still changing, and that since I was a child I have seen wonderful alterations in them, and in their effects upon vegetation. We have now indeed what may be called two winters and two summers, October and May, July and December.

Merriott, Crewkerne.

J. SCOTT.

COVENT GARDEN MARKET.

JULY 18TH.

Flowers.—These consist chiefly of Roses, Larkspurs, Lilies of different sorts. Bell-flowers, Pinks, Coreopsis, Centaureas yellow and blue, and the various kinds of flowers now in bloom out of doors. From indoors there are Gardenias, Hoyas, the double-flowered *Tabernaemontana*, *Calceolarias*, *Pelargoniums*, *Fuchsias*, *Hydrangeas*, *Eucharis*, &c. There is also the usual amount of Palms, Ferns, Club Mosses, *Dracanas*, *Enonymuses*, *Myrtles*, and other evergreen subjects. Amongst hardy plants the Creeping Jenny is most conspicuous, but there are also Fern roots, and many other miscellaneous things.

Fruit.—Of bush fruit there is an abundant supply, and the produce is cleaner and freer from blight than has been the case for these last two seasons. Peaches and Nectarines are excellent and equal to the demand, but the supply of English Figs is about over until open air Figs come in in September. Pine-Apples and Grapes are excellent in quality, but amongst Melons there is yet room for improvement.

Vegetables.—These have been good in quality throughout the season, and at present the supply is equal to the demand. Amongst the principal kinds are Cauliflowers, Carrots, Cabbages, Onions, Vegetable Marrows, Peas, Beans, &c. Open-air grown French Beans are now coming in, and in less than a fortnight they will probably be abundant.

Prices of Fruits.—Apples, per doz., 6d.; Apricots, 2s. to 4s. per doz.; Cherries, per lb., 1s. to 2s.; Chillies, per 100, 2s.; Currants, per time, 4s. to 8d.; Figs, per doz., 3s. to 10s.; Gooseberries, per quart, 3d. to 6d.; Grapes, hot-house, per lb., 3s. to 6s.; Muscats, 6s. to 8s.; Lemons, per 100, 8s. to 14s.; Melons, each, 2s. to 6s.; Nectarines, per doz., 6s. to 13s.; Oranges, per 100, 10s. to 16s.; Peaches, per doz., 12s. to 30s.; Pears, per doz., 1s. to 2s.; Pine-Apples, per lb., 3s. to 6s.; Raspberries, per lb., 4d. to 1s.; Strawberries, per lb., 6d. to 1s. 6d.; Tomatoes, per doz., 1s. to 3s.; Walnuts, per bushel, 6s. to 10s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 3s. to 6s.; Beans, Kidney, per half sieve, 5s.; Beet Red, per doz., 1s. to 2s.; Cabbage, per doz., 1s. 6d. to 2s.; Carrots, old, per bunch, 8d., young, 1s.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 4s.; Cucumbers, each, 4d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horse-radish, per bundle, 3s. to 4s.; Leeks, per bunch, 6d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 4s. to 6s.; button, per quart, 8d.; Parsley, per doz. bunches, 6s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 9d. to 1s. 6d.; Potatoes, per bushel, 5s. to 10s., per lb. 2d. to 4d.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Scorzoneria, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, old, per bunch, 9d., young do. 1s.; Vegetable Marrows, per doz., 1s. to 2s.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE TREES AT FULHAM PALACE.

IN all England there exists no place more interesting to the lover of trees than the garden belonging to the palace of the Bishop of London at Fulham—for here it was that two centuries ago, the first great practical impulse was given to the introduction and culture of new and remarkable species; and here, to this day, survive the first individuals that were seen in this country of some of the most esteemed ornaments of our modern pleasure grounds. When, and by whom, the garden was originally laid out we do not know. It is certain, however, that to Henry Compton, Bishop of London from 1675 to 1713, the year of his death, it owes its fame as the oldest collection in Britain of worthy and beautiful arborescent plants; and pleasant is it to find that now in 1873—a couple of hundred years after the foundation—the good taste that supplied the beginning, and the energy and intelligence that so well prosecuted the first design, have not only not expired, but are again well to the front. A more ungracious expression in regard to a plant cannot be heard than that which contemns it as "old" or "old-fashioned." A plant that was ever worth having at all, can never become antiquated or out of date; a tree beautiful once is beautiful always; and should it not remain so, as long as one lives, it is not the tree that is to be pitied, but the man to whom it no longer has a meaning. As many novelties as you like, and can find a place for, but in gardening, above all things, "never cut an old friend." At Fulham, accordingly, it is so refreshing to observe how the inmates of 200 years' standing, decrepit though many of them no doubt may be, receive all the grateful reverence due to age, propped up so kindly, provided, as it were, with the "old arm-chair"; and yet how tastefully the collection is year by year augmented, as when in a sculpture-gallery we see the delicate art of to-day side by side with what once on a time was wrought on the laurelled shores of the Ægean. Of course there are similar blendings of the old and the recent in every large and well-appointed garden and pleasure ground—at Kew, at Chatsworth, and a thousand other places. But the fact not to be overlooked, and which gives special interest to the Fulham collection, is that the venerable trees there to be seen are the veritable and identical individuals, there is every reason to believe, at least, in several instances, which of their respective kinds, were the first to live in England. We are so accustomed now to the Magnolia and fifty other illustrious trees, so familiar and so big that they seem like aborigines of the soil, that we are apt to forget that there was a time when they were unknown. But to every man of sense and taste, as much interest attaches to the first Negundo, as to the first *Odontoglossum vexillarium*, or any other vain *débutante* from the tropics, with an apronful of Latin for its name, and that, after all, is only a floral butterfly, flirting to-day—to-morrow only a bygone. What can be more comely or perfectly beautiful in its way than the great tree of the species named on the lawn at Fulham? Large, round, and of the tenderest light amber-tinted green, especially when the sunlight bathes it, the Fulham Negundo is, without question, one of the most beautiful examples in the country of this charming tree. The good bishop was the donor, A.D. 1688; and well would it have been could his own name have been bestowed on this admirable production of nature rather than on the little North American myricaceous shrub, pretty and curious as it is, which stands in the catalogues, and far too rarely in gardens, as *Comptonia asplenifolia*. The latter, it may be well to remark, was introduced, about 1710, by another devoted lover of choice plants—Mary, wife of the first Duke of Beaufort, who had a remarkably fine collection at Badminton, and lived, good old lady, to the ripe age of eighty-five. In similar compliment to herself we have the genus *Beaufortia*. Associations of this nature are, to the gardener who loves the "pleasures of memory" as well as the "pleasures of hope," shrines which he

never forgets, and which he visits almost as a good Mussulman visits his Mecca. *A propos* of these etymologies, it may further be remarked that Bishop Compton seems to have procured his new kinds of tree—those, at all events, which come from North America—through the aid of the Rev. John Banister, a sort of missionary whom he despatched to Virginia, where unhappily he lost his life through a fall from a precipice—one of the earliest of the many who have perished, alas! in the cause of science. "The noble army of martyrs," rightly reckoned up, would include many more than those who suffered for conscience' sake. Banisteria is well known to be a very beautiful genus of West India and Brazilian Malpighiaceæ—the leaves, in several of the species, being covered beneath with luminous pubescence.

The total area of the Fulham Palace grounds is about 40 acres, and about one half of this is enclosed by a moat, said to have been originally the water defence of an ancient priory. Between the moat and the Thames are some fine old Poplars and White Willows, which add greatly to the picturesque character of the scene, and of course swell the list of noble Fulham trees. Within the enclosure, part is garden *pur et simple*, and part is lawn, or expanse, at all events, of level grass, the chief portion of the older and more interesting trees occupying localities upon the turf. How many of them were actually planted by Bishop Compton cannot now be positively determined; but there is positive mention of several in the account of the garden given by Ray, in the "*Historia Plantarum*," Lib. XXXII. (published in 1686), and again in a very interesting description of the Fulham Garden, in the *Philosophical Transactions* for 1751. Ray mentions, as trees introduced and probably planted by Bishop Compton, the *Magnolia glauca*, the Tulip tree, the Sassafras, the *Aralia spinosa*, the Hickory, the Liquidambar, and several others from North America; also the *Corylus Columna*, and certain Pines from the South of Europe. Others, for which modern England is primarily indebted to this enterprising man, are the *Cratægus coccinea*, the *Laurus Benzoin*, the *Quercus coccinea*, and the *Gleditschia triacanthos*. Of course it is not meant to say that Compton was absolutely the first to import exotic trees. The celebrated John Tradescant, in the time of Charles I., had already introduced two or three or more, cherishing them in his famous old garden at Lambeth; and although Compton did so much to diffuse a taste for the novelties from the other side of the Atlantic, it must not be forgotten that Evelyn had already earned for himself the title of "prince of arborists." But Evelyn's prime delight was to furnish interest in the cultivation and improvement of the other indigenous trees, and it is unquestionably to the force of his example at Wootton, and to the urgency of his recommendations, that England, during the last two centuries, has been indebted for the principal portion of her planted Oaks. What Compton essentially did, and after a manner perfectly *sui generis* and unprecedented, except in the case of Solomon of old, was to set going that noble enthusiasm on behalf of the acquisition of new and splendid trees which has by degrees rendered our island the richest storehouse in the world of specimens of hardy ligneous vegetation. Well may we feel that the first, last, and best emotion to become conscious of in contemplating these grand old trees of his own planting, that noble Cork tree, for instance, that glorious *Juglans nigra*, that indomitable old Ilex, is reverence. I think of the days when they were saplings; how it must have warmed the heart of the worthy old bishop to see his treasures take root kindly; to watch, year by year, the branches lengthen and strengthen; to mark the leaves coming out more joyously and more plenteously every spring; and by and bye to note the adolescence wax so sweet, that instead of looking down upon a little thing barely so tall as his knees, he should be able to look up and enjoy their grateful shade. Nothing in life is so elegantly parallel with the growth of a beautiful child into noble manhood or graceful womanhood as the uprising of a tree, especially one of the ornamental kind, and if ever a man opened up a new satisfaction to the human race, not to be excelled, and to grow with all the years to follow, it was Bishop Compton, when he excited the desire to make England as it were the College of the Trees, the University where all should find a place, and where all should win and wear

perpetual honours. That by no man was honour deserved better, was plainly seen by his compeers, and hence the eulogiums bestowed on Compton, not only by Ray, but in the writings of Plukenet and many others of the period. A man who inspires keen and pure love of trees, and shows people how to make them grow and become glorious, does a far greater service to his fellows than one who addresses himself simply to flowers. The permanent pride of a gentleman's garden will always consist in its trees and shrubs, provided they have been well-selected and fairly and honestly treated at first—not being simply stuck into the ground, as if they were posts; but cared for thoughtfully and prospectively; and a wise gardener, after he has well considered his plans, and well got all in readiness for abundance of good fruit and solidly esculent vegetables, will always be best declared by the amount of generous regard he shows for first-class trees and for shrubs that shall be a delight, whatever calamities befall the flowers.

The trees specially interesting in the Fulham grounds as they are at present, are the old Planes, the grand *Ailantus*, an *Ornus Europæus* (this year producing an inconceivable abundance of fruit), the magnificent *Gleditschias*, the Champion Oak, the Negundo, the aged Cork tree, the majestic though infirm *Cercis*, a *Celtis*, a *Quercus palustris*, a fine *Taxodium distichum*, the original *Quercus Fulhamensis*, an *Acer reticum*, a Cedar of Lebanon (said to have been planted in 1683), not large, but very effective, and an Elm of truly wonderful size and beauty. Always grand and sumptuous, the magnificent examples of the Elm now standing at Fulham is estimated to contain no less a quantity than 400 cubic feet of solid timber! Besides the above, there are strikingly beautiful examples of the *Cratægus orientalis*, the *C. orientalis sanguinea*, the Tulip tree, Robinias (one of them draped with Ivy), a *Paulownia*, a *Catalpa*, both these latter flowering occasionally, an *Acer eriocarpum*, a *Pavia macrostachya*, and many more, with good illustrations, too, of numerous handsome shrubs, such as the *Rhamnus hybridus*, so desirable in its copious and glossy foliage, the *Cornus Mascula*, and the Spindle tree. Shrubs of everyday occurrence, the Bladder-senna, Lilacs, Laburnums, and all other such indispensable enrichments of a good garden, of course are here in plenty, the successors of Bishop Compton, and especially Bishop Porteus and Bishop Blomfield, having given every encouragement to the bettering of the collection by additions of what was already well-known in the country. Many of the trees originally planted had from one cause or another, disappeared, or been designedly removed; and hence it became so much the more important in subsequent years to fill the spots anew. Very good taste has been shown likewise in the introduction of *Yuccas*, which in their quaint and almost antediluvian forms, give an air of antique richness to the general scene; while huge tufts of Pampas Grass, again with a certain primeval air, add still further to the pleasing effect, and bring us at the same moment, in a manner very agreeable, face to face with the botany of the immediate present. A similarly agreeable effect is produced by the planting of nearly a score of the best modern varieties of Ivy against the south wall of the private chapel, part of a building, by the way, which though unpretentious, is very interesting. The palace, as a whole, constitutes a quadrangle, with a large square open space in the middle. Whatever else may be introduced at Fulham during the future, evergreens should always have a foremost place. It was for these the garden was largely noted in the beginning, and the complexion that gave it fame in youth should be preserved during the dignity of its ripe and unblemished age. When Compton lived, evergreen trees and shrubs were called by the simple name of "greens," a use of the word important to remember while reading the poets of the time of Cowley, and green things such as these must assuredly form the most fitting memorial of such a spirit and such handiwork as the good old Bishop's. His remains are interred in the adjacent church or churchyard, whether with or without a monument we did not observe. It matters very little, for a better than could be cut in marble lives in these glorious trees.

Si monumentum quaeris, circumspice!

LEO GRINDON.

NOTES OF THE WEEK.

— We have received from Messrs. Rivers, of Sawbridgeworth, a remarkably fine example of Lord Palmerston Peach, weighing over 11 oz. This noble fruit was one of seven produced by a small standard tree grown in an 11-inch pot, clearly proving that really fine fruit may be grown in that way.

— ONE of the finest objects now in flower in our gardens is the New Zealand *Arundo conspicua*. Of this there are many tufts in Mr. Cranston's Nurseries at Hereford, 9 feet high, and bearing many silvery plumes of flowers. When well grown this *Arundo* is as good as the Pampas, and flowers two months earlier.

— IN the Wellington Nurseries, St. John's Wood, where many hundreds of hybrid *Begonias* are now in bloom, we noticed a pretty double-flowered one, of a pale blush or pink colour, and of good substance and form. This is the first time we have seen a double-flowered *Begonia*. We are informed that the plant in question bloomed for the first time last year, and that it has since then well sustained its character.

— The piece of ground on the Thames Embankment between Charing-cross Station and Westminster Bridge, which has so long lain waste, has just come into possession of the Board of Works, and they are about to convert it into a public garden, after the fashion of that on the east side of Charing-cross Station. Plans for laying out the ground were submitted to the Board for approval during the present week.

— As an instance of the length of time that pollen, if secured from damp, will preserve its fertilising properties, M. Carrière states that M. Houlet collected some pollen of *Ceratozamia mexicana* in the gardens of the Muséum in 1867. With this he fertilised some female flowers of *C. mexicana* in 1872, the result this year being an abundant crop of the drupaceous fruit of this plant.

— MR. WARE informs us that he has several fine clumps of *Spigelia marilandica* in full bloom—the first time that he has succeeded in growing it in perfection. It is planted in peat, and sunk in the ground, say 3 or 4 inches below the surface level, the sides being kept up with stones. In this way abundance of moisture is ensured and partial shade—circumstances under which many plants can be grown which would not succeed under ordinary treatment. Mr. Ware has *Mimulus repens*, *Gentiana Pneumonanthe*, and many other kinds of plants, growing freely in situations of this kind.

— MR. BLACKLEY, of Leyton, asserts that he can grow Potatoes free from disease, and, in order to test the value of his assertion, he has been allowed to plant a plot of ground at Chiswick with kinds considered to be most liable to disease. The advantages belonging to his mode of culture are stated to be entire freedom from disease and a heavier crop, produced at less cost than that obtained in the ordinary way. In the experiment now under trial whole Potatoes of medium size have been used as sets, which were planted on the 31st of May. The particular treatment on which Mr. Blackley relies for success is at present, we believe, a secret; but he states that by it he has succeeded in keeping his Potatoes free from disease for the last three years.

— AMONGST the Bamboos which may be "profitably grown," M. Carrière mentions *B. mitis*, *B. aurea*, *B. viridi-glaucescens*, and *B. nigræ*. Of those that may be cultivated in the open air with a fair prospect of success, he speaks of *B. Quilloi*, *B. flexuosa*, and specially of *B. virescens*. With these, he incidentally mentions *Arundinaria falcata*, which, in favourable soil and position, will send up stems 20 feet high. It must be observed that all the *Bambus* require incessant watering during the summer. To secure a well-developed growth of any of them, a rich soil is necessary. If possible, they should be planted in a moist alluvial place, where they may attain, in a great degree, the conditions natural to them. It is really difficult to point out a plant which, in its graceful, distinct, and exuberant foliage, surpasses the Bamboo, and we trust to see it henceforward much more largely grown amongst us than it is.

— A SMALL party of gentlemen took a drive through Epping Forest on Saturday afternoon for the purpose of noting its present condition in connection with the legal and other proceedings which it is hoped will bring the question of its preservation to a satisfactory termination. The surveying party were accompanied in a portion of their route by Colonel Palmer, the senior forest verderer; the others being Sir Antonio Brady, Alderman White, and Mr. Wythes. The Queen herself has, it appears, recently expressed her deep interest in the attempt to preserve, for public use and enjoyment in perpetuity, as much of Epping Forest as possible; and Lady Burdett-Coutts has presented to the Forest Fund a further donation of £50 to assist the work of preserving this forest as an open space for the recreation and enjoyment of the people of London.

THE INDOOR GARDEN.

MAIDEN-HAIR FERNS.

(ADIANTUM.)

For grouping with cut flowers, either in choice bouquets or in flower-vases for the table, Maiden-hair Ferns have no equal. Perhaps the best known among them is the old *Adiantum cuneatum*, the fronds of which are in larger demand than

those of any of the other kinds. The noblest species of the whole group is, however, *A. Farleyense*, but to have it in really good condition it requires to be grown in a high humid stove temperature. There are *A. Peruvianum* is also an excellent species, which somewhat resembles the old *A. trapeziforme* in boldness of segment and general habit, but it is far superior to that plant in graceful beauty. This has been introduced by Messrs. Veitch & Son, to whom we are also indebted for the beautiful *A. amabile*, which is also known as *A. Mooreanum*, and which is one of the most charming varieties in the whole group. Some of the Maiden-hairs may be grown in a Wardian case, and even in the sitting-room window without protection during summer; but most of them succeed best in the humid temperature of a plant stove or tropical Fernery. The fresh green fronds of *A. macrophyllum*,

A. Farleyense, and of several other species, associate well with choice Orchids and other exotics. The *Adiantums* grow freely in a compost of good fresh peat, and with the addition of a little leaf-mould or fibrous loam for the more robust-growing species. The pots in which they are placed should be thoroughly well drained, stagnant moisture being specially injurious to the more delicate sorts. We have from forty to fifty species belonging to this genus in cultivation, but in the following remarks we propose to allude to those only

which are most effective as decorative plants for ordinary purposes.

A. AMABILE.—This is an extremely beautiful species recently introduced from Peru; consequently it will be found to succeed best in a cool stove or intermediate house. Its gracefully recurved fronds are of a soft light green, and the ultimate divisions are remarkable for their peculiar irregular lobes, which readily distinguish this species from all others. It generally grows from 12 to 18 inches in height, its younger

fronds being delicately perfumed. It was sent to Messrs. Veitch & Sons by their late lamented collector, Mr. Pearce.

A. CARDIOCHLOENA.—This Fern, when well grown, often attains a height of 2 or 3 feet. Its fronds are remarkable for their black shiny stripes and pale green divisions. It is one of the best and most effective of all *Adiantums* for exhibition purposes, and is well adapted for planting out on rock-work in the tropical Fernery. It is known in some gardens as *A. polyphyllum*.

A. CONCINNUM.—This and its elegant variety *A. c. latum* are worthy of a place in the most select collection of stove Ferns. Being pendulous in habit they have a graceful appearance, and may be used either in pots or baskets with good effect. The divisions of the fronds are of a pleasing light green colour, while the rachis is jet black and wire-like. It is well adapted for cutting and for general decorative purposes.

A. CULTRATUM.—This is quite distinct in general appearance from all others, though doubtless but a variety of *A. trapeziforme*, and, like that species, a strong grower. Its fronds are tripinnate and of a bright green, varying from 18 inches to 2 feet high when well grown. It is very effective as a decorative plant or for exhibition purposes, and it does well planted out in the tropical Fernery.

A. CUNEATUM.—This is the commonest of all Maiden-hairs, and one of the most useful. It does well in a moderate tem-



Unequally-lobed Maiden-hair Fern (*Adiantum amabile*).

perature, provided the house is close and humid, producing numerous finely cut pale green fronds, invaluable for grouping with cut flowers or in bouquets. It grows freely planted out in a Wardian case, and is specially useful during the winter months when Fern fronds, as a rule, are scarce.

A. CURVATUM.—An effective species, though rarely seen in good condition. It is liable to turn brown if exposed; therefore, to keep it fresh and healthy, it must be grown in a shady position, and plentifully supplied with water. Its large pedate fronds grow a foot or 18 inches high, and the pinnæ curve backwards, giving the plant a distinct appearance.

A. FARLEYENSE.—This is supposed to be a variable-crested form of *A. tenerum* or *A. Scutum*, and was introduced to our collections from Farley Hill, Barbadoes. When placed in a fresh open compost, in a high humid temperature, it grows with astonishing rapidity, makes a fine decorative plant, with its rich luxuriant fronds. Two of the finest plants we have seen of this variety were grown by Mr. Geo. Lamb, at Colston Bassett, Notts. These were in a Pine stove, and measured nearly a yard through, the fronds being unusually fresh and healthy and beautiful.

A. HENDERSONII.—A distinct plant of robust habit, introduced by Messrs. Veitch & Sons, and growing a foot or 18 inches in height; its mature fronds are of a deep green colour, and elegantly recurved, while its young foliage is of a distinct bronzy crimson, a tint which is retained for a considerable time. When well grown it has a very graceful appearance.

A. LUNULATUM.—This is an old deciduous species, very rare in collections, though easily grown. Its gracefully recurved fronds are pinnate, with kidney-shaped lobes of a light green colour, the apex of the fronds having a viviparous termination of the mid-rib. It dies down every autumn, and springs up again with the new year. It is a native of the East Indies, and is well worth general cultivation.

A. MACROPHYLLUM.—A distinct broadly pinnate species, having erect fronds from 12 to 18 inches high. When young, the fronds are of a rosy bronze or dull crimson colour, changing, when old, to a light green. This is a somewhat difficult plant to grow into a good specimen, and it requires a moderate stove heat, a fresh, open, peaty compost, and not too much water at the root. It comes from the West Indies.

A. PEDATUM.—This is a noble North American species, having, when well grown, fine pedate fronds nearly 2 feet high. It makes splendid specimens for exhibition when grown in pots; but is even more hardy than our solitary British species, and grows well out of doors in sheltered positions in the rock or Alpine garden. A fine plant, growing freely, may be seen under a sheltering ledge in the rock garden of Messrs. Backhouse & Son, at York.

A. SCABRUM.—This is what is called the Silver Maiden-hair, a rare and beautiful species, which grows in a compact mass about 6 inches high. Its fronds are compoundly pinnate, and the remarkable point about this plant is that both sides of the fronds are suffused with a white farinose powder. It is an evergreen species, introduced to our collections from Chili, and will be found to succeed best in the moderate temperature of a close greenhouse.

A. SETULOSUM.—This is a dense-growing species, having dark green tripinnate fronds about a foot high. It is evergreen, and one of the most useful of Ferns, producing, as it does, immense crops of fresh green fronds. It is a native of Norfolk Island.

A. TENERUM.—A strong-growing species, frequently bearing fronds 3 feet long, its polished wire-like stipes rising from a creeping rhizome. When well grown it makes a noble specimen either in a pot or basket. Small plants of it are very useful for stove or dinner-table decoration.

A. TINCTUM.—This is a very useful decorative species, having bright green leaves a foot or more high. Its young fronds are of a bronzy-crimson colour, and give the plant a unique appearance. It grows well in a moderate temperature, and is a valuable decorative Fern.

A. TRAPEZIFORME.—A noble robust-growing species, well suited when well grown for purposes of exhibition, producing, as it does, branched bright green fronds nearly a yard in length. It comes from the West Indies, and when planted

out in the tropical Fernery makes a fine specimen. It sports into one or two distinct varieties, of which *A. Catherinæ* is one of the best, and easily distinguished from trapeziforme by its smaller pinnæ being irregularly lobed.

These comprise the best of the *Adiantums*, but our own British species sports into several beautiful varieties, which may be cultivated in perfection in a close greenhouse temperature, and which are very useful both for ordinary decorative purposes or for exhibition. B.

GARDENIAS.

In a warm stove and under good management, Gardenias will produce large quantities of pure white deliciously-fragrant flowers, for a considerable portion of the year, if grown in quantity. They are readily multiplied by means of cuttings of either the young or old wood, if the cutting-pots are plunged in a moderate bottom heat and the atmosphere is kept nearly saturated with moisture, so as to prevent flagging through excessive evaporation. Few plants form roots more readily than Gardenias, but to cultivate them in perfection they require a high and humid temperature, together with a compost consisting of fresh fibrous loam, peat, well rotted manure, and coarse sand. If the pots are well drained, an abundant supply of moisture may be given at the root. They are best grown in small pots, both for the purpose of producing abundance of cut blooms, and also for general decorative purposes. Old plants of them, in small pots, produce an enormous quantity of beautiful flowers, though, as a rule, the appearance of leggy old Gardenias is far from elegant. Mr. R. Yates, of Sale, near Manchester, who uses thousands of *Gardenia* flowers every year for bouquets and button-holes, grows a quantity of old stunted plants, 4 or 5 feet high, in very small pots, and these produce hundreds of flowers each; and, though I have seen Gardenias grown well elsewhere, I never saw them flowered so profusely as at the establishment just alluded to. Dwarf plants are very useful during the summer months for the decoration of the sitting or drawing-room. One of the best species for the latter purpose is *G. radicans*, a compact-growing species that flowers well in a small state, and remains a good while in bloom. Small flowering plants of *G. radicans*, *G. florida*, or *G. Fortunei*, may easily be obtained by taking off the branches of a large plant after the flower-buds are set, and striking them separately in small pots, in the gentle bottom-heat of a close propagating-case. Every branch will root readily in a week or two, and they may then be removed to a warm stove, and placed near the light to open their flowers. Though, while growing, Gardenias require a high temperature, when in flower they will bear removal to a much cooler atmosphere, and will continue in bloom for a considerable time. The flowers must be kept dry, as, when in a cool house or room, the least drop of moisture on the petals is apt to discolour their pearly whiteness.

After the plants have flowered, they may be pruned in closely, and started into growth for next season's supply. Pot them in the compost just named as soon as the young growth appears, and give them the benefit of a light sunny position near the glass, so as to keep them dwarf. Plenty of air may be admitted during summer, and a dose of liquid manure once or twice a week will strengthen the plants considerably, and also improve the colour of their foliage. For market purposes *G. florida* and *G. radicans* seem to be the favourites. *G. citriodora* is a compact bushy plant, which grows from 18 inches to 2 feet high; its branches are clothed with opposite dark green leaves, in the axils of which the sweetly-perfumed flowers are produced in dense clusters. The blooms of this species, though single and rather fugacious, are admirably adapted for bouquets when mounted separately on fine wire, one or two being quite sufficient to give a bouquet a most delicious fragrance.

G. florida is another fine species, too seldom seen in cultivation. It is a shrubby plant, which grows from 2 to 6 feet high, and which has from two to three dark green opposite leaves. The flowers are about the size of half a crown, of a pure white colour, and are as double as those of a white Pink or Balsam. They are produced two or three together at the

tip of the branches, so that the more bushy the plants the more flowers one may expect to find on them. The flowers of this species are produced from December or January to May or June, or even later, according to the treatment to which the plants are subjected. With plenty of heat and careful management this species may be had in flower all the year round. One variety of this plant has its foliage margined with creamy-white, and when well grown is very ornamental. Like the green-leaved form, it flowers freely in spring.

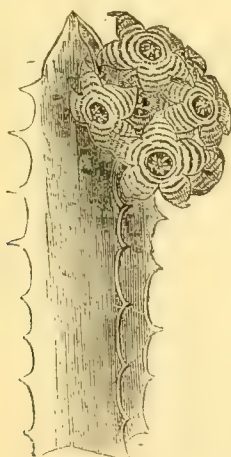
G. Fortunei is a robust-growing species, which has broad bright green foliage, and bears large pure white flowers very sweetly scented. It is a free flowerer, and its blossoms are invaluable for bouquets or button-holes. It was brought from China by Mr. Fortune many years ago; and thrives under the same treatment as its congeners.

G. radicans is the best of the genus as regards habit, being dwarf and shrubby, and clothed with small bright green leaves, which are much narrower than those of the other species. It grows only from 1 to 2 feet high, and when well managed flowers abundantly, its blossoms being double, pure white, and very sweetly perfumed. It blooms all through the summer months. A larger-growing and more profuse flowering form, called *G. radicans major*, should be added to every collection in which Gardenias are grown, as it grows equally well and has the largest blossoms of the species. There is also another interesting form of *G. radicans*, in which the leaves are margined with creamy-white, and which grows as freely and bears flowers in as great profusion as the ordinary form.

G. Stanleyana is wholly unlike the kinds just named. It bears large trumpet-shaped flowers, which are produced in tolerable abundance during the summer months, but they are not so sweet as blossoms of the ordinary kinds. It is a native of Sierra Leone. J. S.

STAPELIAS.

This is a singular genus of succulent Cape plants, which number nearly a hundred species; but a very small proportion are now to be found in ordinary gardens. They are



Stapelia europaea.

branched, leafless plants, which seldom grow under cultivation more than a foot high, and which bear curious, stellate, waxy flowers that vary greatly both as to size and colour. A marked and well-known peculiarity connected with the flowers of these plants is their unpleasant and, in some cases, even repulsive odour. Another marked feature in their economy is their having waxy pollen masses analogous to those of many Orchidaceous plants. The carrion scent emitted by the flowers, by attracting flies, is doubtless subservient to the process of artificial fertilisation, without which the seeds of these plants could not be produced. It is very common, when these plants are in bloom, to see great blue flies busily engaged in depositing their eggs right down the centre of the flower, and, in doing so, they not unfrequently dislodge the pollen masses, and thus

unconsciously effect fertilisation. *Stapelias* are readily propagated by means of cuttings made of their fleshy shoots inserted in sandy soil at this season, and are by no means difficult to cultivate if kept on a shelf close to the glass, and in a rather close atmosphere. It is useless to attempt striking cuttings during the dull autumn or winter months, as the shoots do not then possess vital energy enough to emit roots, but damp off. Some of the species, as *S. Asterias*, *S. Plantii*, *S. hirsuta*, *S. Hystrix*, and *S. grandiflora*, are very effective when in flower, and seldom fail to attract attention. The accompanying illustration of *S. europaea*, sometimes called *S. italica*, a native of South Africa, but naturalised in the South of Europe, will convey some idea of the



Single bloom of *S. europaea*.

general conformation and markings of these curious fine-rayed flowers, the prevailing colour of which is dull yellow, heavily barred or blotched transversely with brown or purple, many of the varieties having their flowers densely covered with long purplish hairs. *Stapelias* grow well in sandy loam in well-drained pots; and the smaller the pots are the better, as they invariably lose their roots during winter, if surrounded by a damp mass of stagnant compost. They bloom at different times through the spring, summer, and autumn months.

W. H.

Griffinia hyacinthina.—Will you kindly give me the proper treatment of this plant? I have a bulb of it which has been without either root or leaf for more than eighteen months. It has been in heat and out of heat, without water and with water, but it does not assume any appearance of growing.—JOSEPH BAYLEY, *Yarmouth*. [I fear that your correspondent's *Griffinia* is not likely to grow, but as it possesses some appearance of life, I should recommend its being kept in the temperature of an intermediate or Mexican Orchid house, just giving it sufficient water to keep the soil in the condition best described as neither wet nor dry. I find that the plant thrives best in sandy loam, never allowed to become dry, and in a temperature of from 50° to 60° whilst growing, and of from 40° to 45° when at rest.—T. BAINES.]

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Rhynchoptelium montanum.—It may interest lovers of novelty to hear that a plant of this is now added to the Kew collection of succulents. It was originally in the collection of Mr. Wilson Saunders, and is a fine specimen, about 4 feet high, the thick stem being surmounted by a plume of drooping lanceolate leaves of a glaucous or silvery-green colour.—S.

Ficus diversifolia.—We find this, when properly pinched, a most interesting and graceful plant, which stands in an ordinary sitting-room nearly as well as *F. elastica* and *Aralia Sieboldi*. It is covered with little yellow-orange fruit, in different stages of growth, the whole year round, and is easily propagated by means of cuttings, which also fruit at once. It seems to be very little known, judging by the attention which it always attracts when our plant is seen.—T. J. HORE, *Wardle Lodge*.

Epidendrum oncidoides.—This is now in flower at Kew. It cannot be called a showy species, but it is well worth growing on account of its large greenish flowers being deliciously scented. The pseudo-bulbs are about three inches long, and of a dark, shining green colour, bearing two or three narrow strap-shaped leaves, which vary from a foot to 16 inches long. The flower-spike is produced from the apex of the bulb and is about two feet long and branched. Sepals and petals dull green, suffused with pale brown; lips three-lobed, white, streaked with purple lines.—B.

Fuchsia fulgens multiflora pumila.—This is a pretty little variety of a well-known species. It flowers freely, grows only about 6 inches in height, and is well adapted for planting here and there in carpets of *Selaginella* in the conservatory. It also forms a valuable subject for filling beds of small size in the flower garden. It has tuberous roots, which may be lifted, stored away in winter like *Dahlia* tubers, and re-potted in spring, or if grown in pots, they can be stored away in winter in some dry cellar. This little *Fuchsia* will also thrive well in windows.—D. MACINTYRE.

THE ARBORETUM.

REMARKABLE TREES.

"In the vegetable kingdom," says M. F. Barillet, in a letter to the *Revue Horticole*, "nothing is more striking than the sight of an old tree of gigantic proportions, whose origin is lost in the depths of an unknown age." The trees which attain this patriarchal distinction of longevity are the Oak, the Elm, the Plane tree, the Yew, some species of Fig, and the Cedar. In his list of remarkable trees, M. Barillet commences with "the Oak of Allouville," of which we have already given a detailed account, with an illustration, at p. 161, Vol. III. of THE GARDEN. The next on his list is the Oak of Montravail (near Saintes), one of the survivors of the old forest of Saintonge. The trunk of this tree is hollowed to the extent of some 13 feet in diameter and nearly 10 feet in height. It is supposed to be about 2,000 years old. At $3\frac{1}{4}$ feet from the ground it measures nearly 23 feet in girth, and the height of the tree is 65 feet. The Oak of Antein, in the forest of Senart, has a circumference of 17 feet, and covers with its foliage a space of 88 square feet. Of Chestnuts, that known as the Chestnut d'Esau, in Dauphiné, is one of the most remarkable; not, however, to be approached by the Chestnut of Mount Etna, already described at p. 36, vol. I., of THE GARDEN. This Chestnut d'Esau measures 40 feet in circumference, and even now, in what may be called a very good old age, produces an abundance of chestnuts. At Finisterre, close by the sea, is the Fig Tree de Roscoff (a specimen of *Ficus Carica*). The spread of the branches of this tree is 108 feet, the diameter of the trunk is nearly 22 feet. In Switzerland, near the mineral waters of Evian, is the large Chestnut, called Chataignier de Neuve-celle. This, from its picturesque appearance, is much visited and admired by tourists. At 6 feet from the ground it measures over 16 feet in diameter. Not far from Geneva is the Cèdre de Beaulieu (*Cedrus Libani*), which measures over 16 feet in diameter at the base, is over 97 feet high, and is supposed to have been planted in A.D. 1735. In the Canton of the Grisons, in Switzerland, is the great Maple de Trons (Erable de Trons), a common Maple, whose age is computed to be at the least 600 years. The diameter of its trunk is over 33 feet, and now, in its decrepitude, the devotion of the villagers, who love it for its far-extending hereditary associations, have propped its declining limbs with a wall, and secured them from unfriendly blasts with stout bands of iron. Passing on to Germany, we find in Wurtemberg, the famous Elm of Neustadt, which is truly a tree of some size, the spread of its branches being no less than 142 feet. These branches will be considered pretty numerous, when it is recorded that they are supported by 106 stone pillars. The two largest of these bear the arms of Duke Christophe de Wurtemberg, dated 1558. The peculiar habit of this tree was that it divided itself into two great branches, very much over 100 feet in length. One of these, however, was broken off by a storm in 1773.

Passing from Europe to Asia, we find at Smyrna a Plane tree (*P. orientalis*) of fabulous age. Its trunk has been hollowed out so as to form a recess of over 15 feet in height. In the little island of Cos, in the Grecian Archipelago, is a Plane tree of large dimensions. The trunk measures about 8 feet in diameter; it is of unknown age, and the veneration of the people who have been born beneath its shadow has affectionately supported its failing limbs with columns of marble and granite. In Dalmatia, on the east side of the Adriatic, near the village of Cannosa, stands a fine specimen of *Platanus orientalis*. At $3\frac{1}{2}$ feet from the ground it is 10 feet in diameter. One of its branches measures over 3 feet in diameter. It covers an area of 240 feet, and its age is reckoned at more than 200 years.

Humboldt, in his "Voyage aux régions équinoxiales," mentions a giant Mimosa, known as "l'arbre géant de Guère," growing near Venezuela, and states that "a battalion could find shelter under its branches." After alluding to many other trees of minor celebrity, M. Barillet, not inappropriately, concludes with a passing tribute to the memory of the "Five Oaks of Auteuil" which, prior to the invasion of the Germans in the late war, formed one of the most attractive features in the Bois de Boulogne. These fine trees measured over 5

feet in diameter, and their age was estimated at, at least, 1,000 years. Under their shade Béranger loved to linger. They are gone, but, were it possible, their mutilated stumps would be well consoled by M. Barillet's application to them of the lines:—

Dulce et decorum est pro patria mori.

W. M.

NORTH END HOUSE GARDENS.

The gardens of H. G. Bohn Esq., at Twickenham are, for their extent (which is between six and seven acres), unsurpassed by any so near London. Mr. Bohn gave his annual Rose fête a few days ago, when a very large company had the privilege of seeing and enjoying the beauty of this pretty group of three distinct gardens, each different in character, but at the same time pleasingly blended into the others by well contrived walks and approaches. The well wooded ground at the back of the residence, with its bowers and trellises, and pyramids of climbing Roses, has a character entirely its own; and then there is the shrub and tree garden with its long walks bordered with an immense variety of choice shrubs which are fronted by herbaceous plants, and backed by a noble collection of Coniferae. Then comes the long lawn garden, in front of the house, enclosed on every side by lofty trees, which look full fifty miles away from the great metropolis instead of being close to its suburbs. But for its extent, this lawn garden would perhaps be too much overshadowed by its wall of towering trees, but its length and breadth prevent this, as was proved on the day of the fête by the broad streaks of bright sunlight that fell upon the rich colours of ladies' dresses, and also by the luxuriant blooming of masses of Roses of the newest and rarest kinds, whose flowers clustered in rich luxuriance in front of the shrubberies, and in the midst of gay border flowers, of which so many kinds are in flower during the glorious summer month of July. Mr. Bohn plants his Roses in great groups. He does not spot them about, a damask here, a white there, with a glowing rosy-pink forming another detached speck in the composition—but magnificently gives us a miniature forest of each of his favourite kinds. Here we have a dark mass of the "Emperor of Morocco" the deepest of the damasks. There, a group of bright fiery crimson formed by the blooms of General Jacqueminot, a Rose which Mr. Bohn was the first to introduce and grow in this country. Farther on is a dwarf and far spreading mass of bright pale gold—formed by that pretty double yellow Rose, "Harrisonii" each plant grown on its own wood instead of being hoisted on a standard, and the flowers are all the larger and brighter in consequence. In this garden, as I have said, almost every kind of Rose worth growing is found treated after the profuse fashion of planting in groups; each kind having a domain of its own, in which its effect and general characteristics display themselves to advantage. Whether it be the "Baronne Prevost," the "Duchesse de Cambacères," the "Oriflamme de St. Louis," or "Anna de Diesbach," Roses that may or may not be in Mr. Bohn's magnificent collection, they would each most certainly be grown in the effective manner of large groups of a sort; even Maréchal Niel is grown in this fashion, but this Rose refuses to expand its glorious blooms while blown upon by our chilly summer breezes, and seems to sigh for the palace of glass which it is accustomed to, and which it so well deserves.

But, after all, it is not specially for Roses that Mr. Bohn's garden is remarkable. Its best and most interesting feature is the collection of finely-grown shrubs and trees which it contains; the number and beauty of the Coniferae being, above all, conspicuous. I visited this portion of the gardens in mid June, when the tall Horse Chestnuts, which tower above the lawn, were still in full bloom up to the very top, and Rhododendrons and Azaleas, and some of the Kalmias were in great beauty; but more remarkable, perhaps, than any of these were the great bushes of *Deutzia gracilis*, which studded the fronts of the shrubberies with their masses of snowy white; the soil and climate of Twickenham seem to suit this elegant dwarf shrub perfectly, the trunks of many of the sturdy bushes being as thick as a man's wrist. The

larger growing Deutzias, such as attain to the height of the broad-leaved Lilac, appear to do equally well, especially the double one, *D. crenata* fl. pl., from Japan, the flowers of which are remarkably beautiful, and it is more hardy than *gracilis*. But the double species may also be grown with advantage in a warm greenhouse for the sake of obtaining its graceful flowers at an early period, when they make such charming additions to the spring bouquets of March and April. The *Rhododendrons*, bordering the long walks of the second, or shrub garden, were in great glory at the same time, and their varied tones of crimson, softening down in tender gradations of violet, pink, and blush, to pure white, mingled strikingly with the yellow orange of the *Azaleas*, and with the gay colours of a vast variety of herbaceous plants in full bloom, which filled the border in front of them.

Before speaking of the Conifers, which are Mr. Bohn's favourites. I cannot forbear devoting a few lines to a few accidental and picturesque groupings, which arrest the attention of nearly all enthusiastic horticulturists who visit these gardens. The combinations or groupings to which I allude, are mainly the result of chance, but they are interesting and beautiful accidents which Mr. Bohn's good taste takes care to preserve, and which he appreciates fully as much as though they were the results of his own most deliberate planning, and perhaps more. The first of them occurs on the lawn, near the front entrance of the house, and consists of a once fine *Catalpa*, dying in the too vigorous embrace of climbers, which were intended only to clothe the lower part of the trunk, but which have now invaded most of the branches nearly to the very top. These climbers consist of a semi-double *Rose*, whose long briars, covered with profuse bloom, droop gracefully around, like a woven mantle of verdure and flowers, some of the festoons sweeping down to the turf, and lying luxuriantly along its velvety surface. Mixed with the *Rose* is a gorgeous *Clematis*, whose great blue star-like flowers sparkle here and there, sometimes singly, sometimes in groups, with striking effect. It is quite a study for an artist; and the picturesque tangle of beauty is enriched and supported with straggling masses of deep and light greens, formed by *Ivy* and *Virginian Creeper*. Another somewhat similar combination, and which would, perhaps, be still more attractive to the pencil of the artist, is formed of a picturesquely grown *Ring Willow*, to which a *Wistaria* has attached itself with such persistent vigour as to threaten eventual destruction to its present supporter. These are wild and forest-like features, which it is rare to find in a suburban

garden, and which, on that account, are never-failing objects of attraction when they are thus found almost within the precincts of the vast mass of bricks and mortar and smoke of London.

The Coniferæ, however, as I have already said, are the main feature of this fine garden, which most attracts the attention of the horticulturist *pur et simple*. Many of the specimens of the newer kinds are unique, either from their fine growth or their size, some few being the largest in the kingdom. Several of the kinds, too, are the parent plants of the whole English progeny of their kind, Mr. Bohn having purchased them on their first introduction, often as unique and tiny plants in small flower

pots, for which miniature Conifers he has often paid at the rate of a guinea an inch, or more, and some of them are now trees upwards of 20 feet in height. The *Thuja aurea* are supposed to be the largest in the kingdom, as Mr. Bohn informed me; two of them I estimated at more than 8 feet high, and as much through, being beautifully spherical in form. There is a very noble *Retinospora obtusa*, the largest in the kingdom, of which the accompanying engraving is a representation; and I remarked a very fine specimen of the variegated kind (*R. pisifera aurea*), every branch of which is beautifully tipped with foliage of a bright golden hue. A *Thuja* (*Biota*) *pendula filifolia*, 14 feet high, also struck me as a very graceful object, as did another equally fine example of *Torreya grandis*. But it would be impossible to follow in detail every remarkable specimen of this beautiful class of trees which is to be found in Mr. Bohn's gardens, yet a grand *Larix Kampferi* cannot be passed over. It is an exquisitely graceful tree, to which our engraving on p. 69 does but scant justice, yet serves to give a pretty accurate idea of its symmetrical growth.

Grand border flowers,

such as *Pæonies*, *Iris*es, *Larkspurs*, and *Campanulas*, are frequently found at the feet of the specimen Pines in Mr. Bohn's garden, and greatly add to their interest and beauty; maintaining at the same time that gardenesque character which might otherwise be wanting in this portion of the grounds.

No one should quit Mr. Bohn's gardens without a visit to the Fern walk, on both sides of which will be found a great variety of the hardy exotic kinds. Almost all of them are remarkable, either for their beauty or rarity; and many an admirer of Ferns may learn for the first time what noble plants of this order are perfectly hardy in our climate.

NOEL HUMPHREYS.



Specimen of *Retinospora obtusa* (14 feet) in Mr. Bohn's Garden at Twickenham.

THE FLOWER GARDEN.

HISTORY OF THE HYBRID CLEMATISES.

THE annals of Horticulture bear witness to the improvements which have resulted from the well-directed experiments of cultivators in the hybridising or cross-breeding of the ornamental plants of other climes, after they have been introduced to our gardens. In fact, not a few of the finest plants we cultivate owe their origin to this agency, or to the continued selection of the best seedlings. Some species in certain popular families have, indeed, been crossed and intercrossed until their fixity seems to have been completely broken up, and they now yield us seminal variations to an unlimited extent; while in others, the first sod only has, as it were, been turned, and rich diggings remain behind to reward the persevering operator. Considering what has been already done in this direction, as well as the rich store of originals as yet untouched, and which is from year to year accumulating, intelligent cultivators, and clever painstaking experimentalists, should be encouraged to set themselves to work in good earnest at creating new forms of floral beauty. In this point of view, the Clematis may be looked on as a mine which has not yet become by any means worked out. Those readers who may feel inclined to turn this suggestion to practical account, will find a few brief hints as to the *modus operandi* of hybridising in a subsequent chapter. Here, we propose rather to glance at what has been already accomplished.

One of the earliest successful attempts at hybridisation which can now be traced is the case of *C. Hendersoni*, which was raised as long since as 1835 by the late Mr. Henderson, then of the Pine-Apple Nursery, but the parents of which, though supposed to be *C. Viticella* and *C. integrifolia*, are not certainly known. Its production was a decided gain. The varieties of *C. patens* (azurea or cœrulea), which were first made known, such as *C. Sophia*, *C. monstrosa*, *C. Amalia*, *C. Louisa*, &c., appear to have been introduced directly from Japan, through the agency of M. Von Siebold; but M. Van Houtte records in the "*Flore des Serres*" for 1850, a variety raised from seed by M. Lulon, a gardener at Libourne, and named *C. Luloni*, to which a silver medal was awarded, as a distinct and superior variety at an exhibition held at Bordeaux. *C. atropurpurea* and *C. violacea* are amongst the early productions of the Belgian gardens, having been introduced to cultivation by M. Spæe. M. Lemoine of Nancy was the raiser of some of the first garden varieties of the *patens* race, such as *C. candidissima plena*, *C. florida pallida*, *C. florida violacea*, *C. patens amethystina plena*, &c. MM. Simon Louis of Metz, again, have successfully wrought in this field, and to them we are indebted for several improved forms of the *patens* type, commencing with *C. Louisa plena*, obtained in 1862, and followed by *C. Marie*, in 1865, *C. Clara* in 1868, and *C. Lucie* in 1871. The principal recent labourers in this department are Mr. Noble and Messrs. G. Jackman and Son, whose productions will be hereafter noted. Previously to this, however, hybridisation had been commenced in a systematic way in the United Kingdom by Isaac Anderson-Henry, Esq., of Edinburgh, who was, we believe, first in the field, and who, in 1855, crossed *C. patens* (azurea grandiflora) with *C. lanuginosa*, the result being the production of *C. reginæ*, a handsome lavender-coloured variety of intermediate character, which, when shown in London in 1862, obtained a certificate of merit. Next in order came the Woking hybrids, raised by Messrs. George Jackman and Son. These were the result of crossing *C. lanuginosa* with *C. Hendersoni* and *C. Viticella atropurpurea* in the summer of 1858. The plants bloomed first in 1862, those named *C. Jackmanni* and *C. rubro-violacea* being shown at Kensington in August, 1863, and receiving certificates of merit of the first class. A large number of seedlings was raised from this cross, and many of them proved to be plants of great beauty, but having too close a resemblance in colour and general character to the above-named certificated varieties, to be required for general cultivation. One, however, named *C. Viticella pallida*, bore expanded lilac flowers with red bars; while some of the seedlings *e.g.*, those named *C. V. Moorcaua* and *C. V. amethystina*, reverted to *C. Viticella*, producing the bell-shaped flowers characteristic of that species, though somewhat increased in size, and varying in colour from dark blue to pale greyish lavender. This sowing, moreover, yielded, besides the varieties originally sent out, namely *C. Jackmanni* and *C. rubro-violacea*, the following distinct and ornamental sorts,* namely:—*C. Prince of*

Wales, *C. rubella*, *C. magnifica*, *C. Alexandra*, and *C. velutina purpurea*, all of which possess the profuse and continuous-flowering habit characteristic of the Jackmanni strain. Subsequent crosses made at the Woking Nursery, and in which *C. lanuginosa* was fertilized with some of the dark-coloured hybrids previously obtained, yielded the remarkably dissimilar varieties named *C. Mrs. James Bateman*, *C. Beauty of Surrey*, and *C. Lady Bovill*, all pale greyish blues, the latter peculiarly cup-shaped in form; together with *C. Sir Robert Napier*, a deep rich purple; and *C. Thomas Moore*, in which the long rich purple sepals become associated with very prominent white stamens, thus giving quite a new character to the flowers.

To MM. Simon-Louis, of Metz, the lovers of the Clematis are indebted for some fine seedlings and ornamental hybrids. Indeed, in respect to hybrid varieties, these gentlemen, in spite, they say, "of the denials of the horticultural press," assume for their establishment the credit of being the very first in this particular field of improvement. They claim to have obtained in 1861, and put into commerce in 1863—a year earlier, they say than the appearance of *C. Jackmanni*—their *C. splendida*, which they regard as the type of this superb group of hybrids. This, however, is not quite in accordance with the facts of the case; for setting aside Mr. Anderson-Henry's *C. reginæ*, raised in 1856, *C. Jackmanni* was raised in 1858, first flowered in 1862, certificated in 1863, and if not put into commerce till after *C. splendida*, it was at least well known to English cultivators. The earlier of the Metz varieties were improved seedlings of *C. patens*, as already stated. Of the hybrid forms, *C. splendida*, just referred to, was obtained in 1861, from *C. lanuginosa* crossed with *C. Viticella grandiflora*, and was sent out in 1863. Two years later, in 1865, *C. fulgens*, a variety of the same parentage, with richly-coloured, but very narrow sepals, was sent out; and in 1867 this was followed by *C. perfecta*, a bold French-white flower, which eventually bleaches white.

One of the earliest of the Continental raisers of hybrid varieties of the larger type was M. Briolay-Goiffon, of Orleans, who in 1860 obtained as a cross between *C. lanuginosa* and *C. patens* the variety named *C. Aureliana*, a handsome free-blooming plant, with well-formed porcelain-blue flowers, not sent out, as M. Briolay informs us, until 1865. The names of M. Lemoine of Nancy, M. Rinz of Frankfurt, M. Carré of Troyes, and M. Dauvesse of Orleans, are also honourably associated with the improvement of the grand summer and autumn-flowering Clematises. From M. Rinz, we obtained *C. francfortensis*; from M. Lemoine, *C. lanuginosa candida* and *C. lanuginosa nivea*, as well as *C. Otto Froebel*, and recently the fine double-flowered *C. Lucie Lemoine*, the latter apparently belonging to our *florida* type; from M. Carré, besides one or two earlier and now superseded sorts, we gained *C. Gloire de St. Julien*, *C. Impératrice Eugénie*, and others; while from M. Dauvesse we have *C. Jeanne d'Arc* and *C. Renaultii cœrulea grandiflora*. Besides these, we owe obligations to M. Modeste-Guérin for such admirable varieties of the *Viticella* and *Jackmanni* groups as *C. modesta* and *C. purpurea hybrida*; while M. Lemoine has set his mark upon the herbaceous race by the production of the double-flowered variety of *C. erecta*. The sub-shrubby but non-climbing section has been improved by MM. Bonamy Frères, who were the fortunate raisers of *C. intermedia rosea* and *C. diversifolia cœrulea*.

The Messrs. Cripps & Son, of Tunbridge Wells may justly claim a foremost place amongst the successful English hybridizers of the Clematis family. They have been fortunate enough to obtain an extensive series of varieties from *C. lanuginosa*, the majority of which partake very much of the general character of this fine species, as to foliage and flowering habit, and which are extremely ornamental plants in the late summer and autumn months. Amongst these may be specially mentioned, for their large size and fine shape, the mauve-tinted variety named *Lady Caroline Nevill*, which was exhibited and gained a certificate in 1866; *Mary Lefebvre*, also mauve-tinted, and *Madame Van Houtte*, a flushed white, both certificated in 1867. Some few of the Tunbridge Wells varieties, indeed, as *C. tunbridgensis* and *C. Star of India*—the latter in the way of *C. magnifica*—resemble the Woking hybrids of the Jackmanni type, in style of growth and inflorescence; but the greater number of the named sorts we have seen are evidently more closely allied to *C. lanuginosa*. We are not aware what specific crosses were made

* In this place it is necessary to mention some hybrid Clematises exhibited in 1864 and 1865 by Mr. Townsend, of Hornsey, but of which, singularly enough, nothing has since been heard. Mr. Townsend had been in Messrs. Jackman's employ as propagator up to the end of 1862, and himself gives the history of these varieties in the following words:—"The seed from which these Clematises were raised was hybridised and gathered by me. I came to Hornsey at Christmas, 1862, immediately after which the seed was sown. The plants exhibited were the produce of that seed. Some of them bloomed last year [1863], and one of the plants exhibited is a plant of this year's growth, and

bloomed for the first time this summer." Of those exhibited in July, 1864, before the Royal Botanic Society, *C. lanuginosa violacea*, a dark purple, was awarded a first-class certificate; while *C. lanuginosa atropurpurea*, a reddish-violet, and *C. lanuginosa Hollandii*, violet, with a reddish bar, were severally awarded second-class certificates at the same time. Of those exhibited in July, 1865, at the same place, *C. Miss Braddon*, a lilac-purple with pale bars, was awarded a second-class certificate. The rest were named *C. Aurora Floyd*, violet, with indistinct white bar; *C. Lady Audley's Secret*, lavender; *C. Souvenir de Cardinal Wiseman*, reddish, with pale stripe; and *C. Rev. Canon Oakley*, a pale-coloured rough flower. As these appear to have passed out of cultivation, or in some way or other to have disappeared, we have not included them in our descriptive list of known varieties.

by Mr. Cripps, but he has certainly been eminently successful in obtaining large and finely-formed light-coloured flowers.

Next in order amongst English hybridisers comes Mr. C. Noble, of Sunningdale, who has brought forward a set of novelties bred indiscriminately from the intercrossing of *C. Standishii* and *C. Fortunei*, the seedlings mostly resembling the former both in habit and foliage, and in the finely-formed, freely-produced, flatly-expanded flowers. They show, as do some more recent hybrids raised at Woking, as great an advance in the spring-flowering section, as do the summer and autumn-blooming sorts raised by Mr. Jackman, Mr. Cripps, and Mr. Anderson-Henry in the later flowering groups. In these early varieties, whose beauty is over by midsummer, and which blossom from the ripened wood of the previous season, the flowers have normally eight sepals, but they occasionally produce more—even nine, ten, or eleven. The average diameter of the flower is from five to six inches, the sepals overlapping for about two-thirds of their length, so that the flowers are full and perfect in form; individually they endure about eighteen days, from their first opening to their fall, and during this time are seen in full perfection. The range of colours resulting from this cross may be illustrated by the citation of *C. Miss Bateman*, a fine pure white; *C. Princess Mary*, a pale pink; *C. Lady Londesborough*, a silver grey, and *C. Albert Victor*, a deep lavender. Mr. Noble's varieties were first exhibited and certificated in 1869.

We are indebted to Messrs. G. Baker and Son, of Bagshot, for the happy thought of crossing *C. lanuginosa* with *C. Standishii*, these being the parents of *C. Gem*, in the production of which we have a result, which, so far as the individual flowers are concerned, is barely distinguishable from that of the crossing of *C. lanuginosa* with *C. patens*, as effected at an earlier date by Mr. Anderson-Henry, and which, as already stated, was the origin of *C. reginæ*. The flowers of *C. Gem* and *C. reginæ* are indeed almost exactly alike in size, form and colour, the only material difference being that in the former the stamens are somewhat darker in colour. *C. reginæ*, however, appears to be a more sparse bloomer than *C. Gem*, which, as we are informed, commences to bloom in May, and certainly produces an abundance of buds and blossoms as late as the middle of October, as evidenced by specimens which have been sent to us for examination. In this particular, in its vigorous growth, and the size of its flowers, it has followed *C. lanuginosa*, whilst the colour appears to have come from its other parent, *C. Standishii*.

Some of the most startling results of hybridisation, as to the size of the flowers, have been obtained by Mr. Anderson-Henry, in a set of recent hybrids which has passed into Messrs. Lawson's hands. One of these, *C. Lawsoniana*, occasionally bears flowers upwards of 9 inches across. The other varieties, named *C. Henryi* and *C. Symesiana*, also rank amongst the large-flowered sorts of well-filled outline. Mr. Anderson-Henry has been good enough to communicate some particulars of the history of these plants,

which, as it must be of much interest to hybridisers, we here transcribe:—

"These varieties above named belong to the *lanuginosa* type, *Clematis lanuginosa* being the seed-bearer, and *C. Fortunei* the male parent. Some of the seedlings, also in Messrs. Lawson's hands, flower early; but others, to which group those announced, and which are mentioned above belong, do not bloom before August, and go on till November or later. In fact, I have them under glass flowering now (January 18).

"As to size, they average from 4 or 5 to 8 or 9 inches in diameter, but this last size is the extreme: a bloom of *C. Lawsoniana*, a large-flowered variety, has indeed attained 9½ inches.

"As to the colour of the flowers, there is something to me wholly in-

explicable in all this *lanuginosa*. *Fortunei* brood; for while the seed-bearer *C. lanuginosa* has pale lilac flowers, and *C. Fortunei*, the male parent, has pure white semi-double blossoms, those of some of their progeny deepen into blue or azure, banded sometimes with darker shades, in which a tint of rose comes up. How they should have any shade of blue at all, and still more how they should have darker-shaded bands, is utterly unaccountable to me from all the experience I have had, unless I should be right in an assumption which has been forced upon me, namely, that *C. Fortunei* is a white-flowered seedling variety of a blue-flowered species—perhaps of *C. John Gould Veitch*, these being, so far as I can remember, much alike in their general habit, foliage, and inflorescence, even to the semi-double flowers which both possess. The latter is, no doubt, the more vigorous in growth,* and it has its flowers larger and more double than those of *C. Fortunei*—consequences natural enough, if I am right in this assumption: just as occurred in the white-flowered seedling sport from the lovely blue-flowered *Salvia patens*, which never had the vigour of the original form. My theory is that the sport will sometimes retrogress. I had proof of this in that same white *Salvia*, the seeds of which I sowed, when the seedlings went back into the species, but had flowers of a paler blue. In this way I think I can account for many of those varieties already put out, derived, I assume, from much the same parentage as mine, having the size, colouring, and banding all so different from their parents; for in all my efforts with this tribe—and I began with it, I believe, first in this country, the seeds of my hybrid, *C. reginæ* (*C. azurea grandiflora* × *C. lanuginosa*) having been sown in 1855, long before *C. Jackmanni*, the next, I think, in order, was heard of—in all these efforts, and I have been working on it ever since, I could reckon with some confidence as to the colours to be produced by crossing, till in this last case I felt bewildered. Now it is very notable that though a white-flowered sport may go back in its seedlings to its original blue-flowered species, the white may be fixed, or at least, reproduced in the offspring. Hence I have from seeds of the same head not only the blue and azure-

flowered varieties above noticed, but the pure white or creamy-white *C. Henryi*, and others not yet announced.

"As to the number of the sepals, these vary even in the same group. In that just noticed (*lanuginosa*-*Fortunei*), there are generally six to eight in each flower. To my taste these should stand out straight from the disk, neither incurving nor reflexing.

"Besides the above group I have other crosses, but in all of them the element of size, now so much regarded, falls far short of the approved standard. Thus, in a seedling of *C. lanuginosa candida* × *C. Jackmanni*,

* This does not accord with our experience at Woking, the variety referred to being particularly liable to assume a weakly habit of growth.



Specimen of Kämpfer's Larch (*Larix Kämpferi*). (See p. 67.)

the pollen of which last had been previously stored for eleven months, the flowers, which were of a pretty blue, and six-sepalled, were only 3½ inches in diameter, though *C. candida*, of French origin, has very large flowers. So from another cross, my hybrid *C. reginae* crossed with *C. rubro-violacea*, I have a seedling bearing flowers of a pale purple, six-sepalled as in the seed-bearer, and flowering from May to December in great profusion, but the flowers are equally small.

"I wrought hard to infuse the rich colour of Mr. Jackman's seedlings into hybrids having larger flowers, by crossing them with all the large-flowered varieties I possessed, but failed; and when I inverted the cross by making them the male parents, the seedlings all came deficient in size, as taste now rules."

The variety which, so far as we know, most fully realizes the combination of large size with rich deep colouring, is that named *C. Thomas Moore*, the flowers of which measure from 8 to 9 inches across, and are of a deep puce-violet, a depth of colour the effect of which is very much enhanced by the prominent white filaments of the stamens. This variety, so far as its history can be traced, was the result of crossing *C. Jackmanni* with *C. lanuginosa*.

A more recent brood raised at the Woking Nursery, and which first flowered in 1871, was obtained from the intercrossing of *C. patens* (azurea grandiflora), *C. Fortunei*, *C. Standishii*, and *C. Sophia plena*, with *C. Jackmanni*, *C. rubella*, *C. rubro-violacea*, and *C. magnifica*, the crosses being also reversed. The seedlings obtained from the specific crosses were unfortunately not kept separate, so that the results can only be referred to in general terms. One portion of the plants followed the early-flowering parents of the *patens* type; while the other portion partook more of the character of the late summer-flowering parents of the *Jackmanni* race, but were apparently so far influenced by the early-flowering parents as to somewhat advance the blooming period—a result which was indeed aimed at in making the cross, as it was desired to bridge over the interval which naturally occurs between the flowering season of the earlier and later types respectively. The growth and flowering properties of the seedlings have proved in the highest degree satisfactory. Those which took on the habit and character of the *patens* type showed considerable diversity of colour, *C. Vesta* having the flowers white; *C. Edith Jackman*, *C. Fair Rosamond*, and *C. Maiden's Blush*, being white, more or less tinted and barred with red; *C. George Cubitt*, *C. Lord Derby*, and *C. The Queen*, shades of mauve and lavender—the latter, though an early bloomer, remarkable in the full outline of its flowers, for a strong resemblance to *C. lanuginosa*; *C. Lord Mayo*, and *C. Countess of Lovelace*, shades of lilac, the latter double-flowered, and remarkable among the double sorts for having anemone-formed flowers, that is, flowers with an outer row of guard sepals, and in the centre a rosette of smaller ones; and finally, *C. Stella*, in which the flowers are light violet, with plum-red bars. The proper grouping of these in reference to the cultural sections we have adopted is sufficiently evident; but further experience is needed with those which follow. One, which has been named *C. Unique*, and which is peculiar on account of its green flowers, appears to take on rather the characters assigned to the *florida* section; while another, *C. Baroness Burdett-Countess*, with Solferino-pink flowers, rather later in blooming, bears a close general resemblance to the *lanuginosa* group. Of those which, judging from foliage and general habit, have taken on the characteristics of the *Jackmanni* type, are *C. Lady Stratford De-Redcliffe*, with the flowers mauve-coloured; *C. Princess Louise*, a large bluish-lilac; *C. Mrs. Moore*, a very large midseason white; *C. W. E. Essington*, a reddish violet; *C. Lord Polwarth*, a dark motley violet; and *C. Marquis of Salisbury*, a dark plum-colour, particularly noticeable for its rich velvety surface.

Some of these, namely, *C. Fair Rosamond*, *C. Edith Jackman*, *C. Maiden's Blush*, *C. The Queen*, *C. Stella*, and *C. Vesta* prove to be remarkable for the strong and agreeable fragrance, intermediate between that of Violets and Primroses, which they exhale when in a warm sunny atmosphere, and which is most pronounced in the variety named *C. Fair Rosamond*. The odour varies, inclining in the three first-named sorts to that of the Violet, in the three latter to that of the Primrose; and has been probably derived from *C. Fortunei*, in which an agreeable but not powerful odour had been previously observed.

Thus, within the last ten years, the hardy Clematis has been converted from an ordinary climbing shrub, handsome indeed in some, and elegant in all its forms, to one of the most gorgeous of garden ornaments, unrivalled as a flowering woody climber; while for wall or conservatory decoration generally, for poles and pyramids, for rockeries and rooteries, it is infinitely improved, and as a bedding plant affords altogether a new sensation in flower-gardening.—*Moore & Jackman's Clematis as a Garden Flower.*

Myosotis dissitiflora.—Is this *Myosotis* the best there is for spring bedding? It is pretty in colour, but I want a darker blue and a good flowering sort.—*PHILANDER.* [There is no variety of

Myosotis equal to *M. dissitiflora* for spring bedding or massing. It is, in fact, the only early Forget-me-Not. *Impératrice Elizabeth* is much darker, but then it is a late flowerer, and never makes a display like *dissitiflora*. The latter, properly managed, and where it thrives, is inimitable; it flowers constantly from February to May. As to colour, it varies with the weather; sharp frosts make it bluish-purple; in milder weather it is sky-blue.]

Dwarf Silvery or Variegated Plants.—I should be obliged by your giving me the names of the best dwarf hardy variegated or silvery plants.—*Z.* [*Arabis alba variegata*, *A. lucida variegata*, *Aubrietia deltoidea variegata*, *Alyssum saxatile variegata*, *A. spinosum*, *Cerastium Biebersteini*, *C. grandiflorum*, *C. tomentosum*, *Sempervivum californicum*, *S. calcareum*, *Saxifraga aizoon*, *S. Laggeri*, *S. crustata*, *S. lingulata*, *S. longifolia*, *S. pectinata*, *S. pyramidalis*, *S. recta*, *Scabiosa Webbiana*, *Andryala lanata*, *Antennaria alpina*, *A. tomentosa*, *Santolina incana*, *Artemisia frigida*, *Achillea ægyptiaca*, *Parmica Clavennæ*, *Polemonium cœruleum variegatum*, *Convolvulus lineatus*, *Veronica neglecta*, *Thymus lanuginosus*, *Siderites syriaca*, *Salvia argentea*, *Euphorbia Myrsinites*.]

Tall Scarlet Lily for Planting among Shrubs.—Please to recommend me the best tall hardy scarlet-flowering Lily. I want one to plant amongst choice shrubs. I have already the common white, also auratum, and lancifolium, and alstroemeria, but I require one taller than these, and, if there is such, of a light scarlet colour.—*J. H. W. T.* [For planting in the position named, we would recommend *Lilium tigrinum Fortunei*, *L. t. splendens* (the grandest of all). After these may be mentioned *L. chalcedonicum*, a stately plant of 3 to 4 feet high; *L. Pomponium*, dwarfer, but very effective; and *L. carniolicum*, which is, however, at present rare.]

Zonal Pelargoniums.—The multitudes of these Pelargoniums now in the market perplex me. Will you kindly give me a selection of the best kinds in each section?—*F. T., Derry.* [Mr. Peter Grieve, of Culford, the raiser of Lady Pollock, and many other fine-leaved Pelargoniums, has kindly favoured us with the following selection, viz.:—*Golden Tricolor*: Alice Maud Mary, Colonel Lloyd Lindsay, Edward Richard Benyon, Mrs. Dunnett, Peter Grieve, Prince of Wales, Princess Mary, Victoria Regina.—*Silver Tricolor*: Charming Bride, Italia Unita, Lass o' Gowrie, Miss Burdett Counts: Mrs. Colonel Wilkinson, Mysterious Night.—*Silver margined*, without zone: Avalanche, Bridal Bouquet, Princess Alexandra, Silver Chain, Virgin Queen, White Lady.—*Bronze zonal*: Black Douglas, Bronze Beauty, Pink-flowered Bronze, Gilt with Gold, Golden Harry Hieover, Orange Boven, W. E. Gumbleton, W. R. Morris. The foregoing are the selections which I should make from each respective section. Most of them are equally well adapted for pot culture or for bedding purposes. Golden Harry Hieover is a miniature variety, and an excellent bedder, but possibly not so well adapted for pot culture as some of the others.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Richardia alba maculata.—This would make a beautiful bed in a sub-tropical garden; its leaves are prettily spotted with white, the flowers themselves too are white, and nearly as good as those of *Calla aethiopica*.—*R. H. B.*

Tulips for Beds.—What are the best bedding single white and single purple Tulips? They must not be too tall, as the beds are exposed. The white kinds are for planting through *Myosotis dissitiflora*, the purple with yellow Pansies.—*J. H. W. Thomas.* [Alida a good white, 9 inches high; and Molière a beautiful rich purple, 8 inches high.]

Veronica incana.—This is now very effective, both in the flower garden and herbaceous border. It has silvery grey leaves, and bears numerous erect spikes of dark blue flowers that contrast finely with the light foliage. It is easily propagated either by means of cuttings or division, and when not in flower is always useful as an edging plant. It would prove invaluable for spring bedding or for the margins of shrubby borders.—*B.*

Fragrant Annuals.—Among these we know of none more desirable, if we except Mignonette, than the dwarf and curious *Schizopetalon Walkeri*. When sown in spring, it blooms in June or July, and its flowers are deliciously scented, perhaps even more so than Mignonette; a few flowers in a tumbler of water being sufficient to scent an apartment for some days. Among hardy annuals it is well worth a place, though but rarely met with in gardens.—*B.*

The New Zealand Flax (Phormium tenax) in Flower.—Although the New Zealand flax is perfectly hardy in this neighbourhood and largely used for out of door gardening, I have never known it to flower until this year. In the grounds of the Falmouth Hotel Company is a remarkably fine plant now in bloom, having one stem of flowers about 7 or 8 feet high; the flower spike at a glance reminds one of some of the Agaves, like them also the flowers distil a great quantity of nectar, which, when I saw it, was dripping from them.—*JOHN D. MITCHELL, Falmouth.*

Lily of the Valley.—I shall feel obliged by your informing me what is the best soil and the best position in which to plant the Lily of the Valley.—*E. G.* [The Lily of the Valley is not at all particular as to soil, and, in fact, will thrive under trees and in many spots where other flowers will not live. Like most of its relatives, however, it does best in a light, rich, and deep loam, and a partially shady position suits it best. We saw it naturalised by the acre in woods the other day.]

COLONNADE IN THE GARDENS OF SANS SOUCI,
AT POTSDAM.

ARCHITECTURAL objects necessarily form very essential features in palatial gardens. It is, however, not easy to introduce them with good taste or good effect. Small temples dotted about here and there, too often of the confectionery kind of architectural art, tend to lower rather than to elevate the character of the scene they are intended to embellish; but when an architectural object is well designed, erected in the proper place, and well supported with foliage, the effect is always pleasing, and where the dimensions of the object in question are upon an important scale, a stately and even a majestic effect is often produced. The contrast of the symmetrical lines and ornaments of architecture with the wild irregularities and caprices of nature never fails, when a trained and artistic eye has felicitously marked out their

be done, but nearer to the mansion or palace such elevations as that of the colonnade of Potsdam find their fitting place; and few examples of the kind could be cited as more successful. It is decidedly the finest piece of garden architecture in the grounds of Sans Souci. H. N. H.

Emission of Light by Flowers.—For some weeks past I have been closely observing the columns of THE GARDEN, anticipating some one's observations on this subject, particularly as attention was directed to it in an article which appeared in your number for 26th October last, and moreover June and July being the months during which the phenomenon has been observed to appear. On the evening of the 12th of June last, at 8.10, I was looking at a bed of scarlet Geraniums in bloom in the front of a small Vinery facing south-west, when I was startled by seeing distinct flashes of light flitting to and fro horizontally, and in a line with the flowers of a short row of a



Colonnade in the Gardens of Sans Souci. (See page 197, Vol. III.)

position, to recall the hand and genius of man under the most favourable circumstances.

Either the circle or the square, when found in the midst of irregular natural forms, may be said to be the true signets of man. They denote unmistakably that he has been there with his cunning arts, and set his mark upon the work he has done in opening up grassy glades in the tangled forest, in rooting out the Bramble and rank weeds from the slopes, and in planting here and there a new companion to the aboriginal trees of the district, such as shall improve their aspect by the interposition of vegetation of lighter or darker hues, so as to improve the general effect of the whole. In such a semi-cultivated scene, a circular coping of stone surrounding a natural spring, or two square masses of stone set to serve as the simplest kind of seat on each side of a shady avenue, are sufficient to denote that art has been there. In the more remote parts of a park or ornamental copse no more should

deep scarlet kind of Geranium, similar in general appearance to the old Tom Thumb. I at first doubted my visual organs, but on calling the attention of a gentleman who was near the flowers, he at once corroborated my previous observations; we remained about five minutes observing it, during which time the light was intermittent but at intervals of only a few seconds. I think the appearance of the light extending through the row was caused by all the flowers of the row emitting small flashes at one and the same time. The other Geraniums in flower in the bed were of a zonal variety, and of a less vivid colour, from which no light appeared, I have only on one subsequent occasion seen the same phenomenon, and then on a much smaller scale.—JOHN D. MITCHELL, Falmouth.

THE powdered leaves of the Bay-tree (*Laurus nobilis*), says the Portuguese *Jornal de Horticulura pratica*, have been found an infallible specific for intermittent fevers. The dose is 15 grains of the powdered leaves, which have previously been macerated for twelve hours in cold water, to be taken a few hours before the time of the presumed recurrence of the attack.

THE FRUIT GARDEN.

FRUIT GROWING AT SAWBRIDGEWORTH.

We visited Sawbridgeworth the other day with the expectation of finding fine crops of fruit, more especially in the orchard houses, and were not disappointed. We found house after house containing fresh healthy fruit trees, consisting of Peaches, Plums, Cherries, and Apricots, most of them in pots, but some large old standards planted out, and all in healthy vigour and fruitfulness; while in 100 acres of undulating ground outside, we found great breadths and patches of all the choicest and best kinds of hardy fruit trees for later crops.

SEEDLING PEACHES.

The Early Beatrice Peach is bearing heavy crops of medium-sized fruit, and is, perhaps, the earliest Peach we have in cultivation, being three or four weeks in advance of the Early York, and specially interesting on account of its having been obtained from a stone of Rivers' White Nectarine. Early Louise, another seedling, is but a day or two later than the last, and ripens in an orchard house about the 14th of July. One of the finest of all the seedling Peaches that have been raised at Sawbridgeworth, is Lord Palmerston, which is perhaps the largest-fruited and finest Peach for exhibition purposes ever added to our collection. Two small standards of it in 11-inch pots are now ripening heavy crops, one of the fruits of which was gathered while we were present weighed 11 ozs. The flowers of this variety are large and handsome, and the foliage is furnished with prominent round glands—a section not so liable to be affected with mildew as such as have glands



Pyramidal Peach tree.

of other forms. It is a seedling from the Princess of Wales (Rivers), and ripens naturally about the middle or latter end of September. It is a free-stone variety with a slight tendency to cling on the shady side unless thoroughly ripe, and it has firm, though luscious, melting flesh, very rich and juicy. Though a seedling raised at Sawbridgeworth, in size and beauty it resembles its grand parent, the monstrous Pavie of Pomponne. The skin is of a creamy-white tinged with rosy-pink on the sunny side, and irregularly streaked with crimson. Many hundred seedling Peaches and Nectarines are annually raised here, and often fruit the second or third year from seed. The pedigree of all promising varieties is carefully preserved, and by means of repeated crossings Mr. Rivers

hopes to infuse into some of his future seedlings a constitution capable of resisting our inclement climate in localities



Dwarf standard Peach tree.

where Peaches and Nectarines are at present unknown out of doors.

APRICOTS.

The span-roof and lean-to structures, in which fruit trees are cultivated, are constructed entirely of wood and glass, the latter being simply tacked in with brads, and the edges well painted to prevent drip. Three of the larger houses are 100 feet long, about 24 feet wide, of simple yet substantial construction, and filled with healthy trees profusely laden with fine fruit. Two or three trees of the Peach Apricot are very fine examples of good cultivation, this fruit being generally considered rather a shy bearer under glass. One fine standard is furnished with twenty dozen splendid fruit, just ripening, and seven dozen had been gathered from another specimen on the morning of our visit.

ORANGES.

One notable feature at Sawbridgeworth is the extent to which Oranges are grown and fruited in ordinary orchard houses. Those who have eaten imported Oranges only, have little idea of the luscious flavour and delicate aroma which belongs to home-grown specimens when rightly managed. Oranges require a moist genial heat all the year round, in order to perfect their fruit in one season, and here we find that heat, air, and moisture are the three great essentials relied on for success. The kinds grown are the small brittle-skinned Tangarine, a delicious little Orange, and the tree is a prolific bearer; St. Michael's Tangarine, a larger fruit, similar in flavour; the true St. Michael's, Maltese Blood Orange, Dulcissima, and many others. The sight of Oranges alone amply repay a visit to this establishment in the autumn or early winter months.

CHERRIES.

Cherries have borne abundant crops in one of the houses set specially apart for their growth in the form of pyramidal and bush trees, most of which are worked on the Mahaleb stock. These trees are subjected to a systematic course of summer pruning or pinching, by which any irregularity in growth is readily corrected, and the branches of even very small trees are heavily laden with fruit. Bigarreaus especially are conspicuous on account of their large size and fruitfulness. Cherries are well suited for small suburban gardens; they are easily kept dwarf; their luscious sub-acid fruits form a most refreshing addition to the most fashionable dessert, and they may be made available for four or five months of the year by a skilful selection of varieties and careful protection from birds and insects.

VINES IN POTS.

These are a speciality here, and are in excellent condition; all the best varieties in cultivation may here be seen growing side by side, and the fresh foliage and stout short-jointed canes are a sure indication of heavy crops next year. Muscat Hamburgh or Black Muscat does well here worked on a Black Hamburgh stock. It is the most deliciously-flavoured black Grape in cultivation, and rarely does well on its own roots for any length of time. Its fault is the production of a large proportion of small berries, which give the bunches an irregular or ragged appearance, but when grafted this drawback to a large extent disappears, and it produces heavy crops. Gros Colman meets with a ready sale after having been neglected for years. In appearance it is one of the finest of all black Grapes, and as regards colour, size, and bloom it stands prominent as a show Grape. The Vines in pots in the fruiting house are bearing on an average ten bunches each, and some of the clusters weigh quite a pound and a quarter. In colour they are not perfect, a circumstance doubtless owing to over-cropping; but as respects size and flavour they are most satisfactory. Conspicuous in this house was a solitary Vine of the true Gros Maroc, a variety with fine bunches of large, oblong, well-coloured berries. Judging from its good colour and excellent appearance it is a Grape that, if grown in quantity, would readily find a market. Two of the houses used for pot Vines and Peaches in pots, are heated by one of Deards's centrifugal boilers, which is of cylindrical shape, and has a spiral coil of tubing round the fire. To the one here is attached about 700 feet of 4-inch piping, and it is found to do its work remarkably well. One of the lean-to houses is heated by means of a flue, and here all refuse fuel is collected and economised. There are few places where an orchard house could not be erected and heated with refuse in this manner at a minimum cost. In this house is a lot of miniature Peaches in small pots, all fresh and healthy. The greater number of these, will be fruited next year, and when covered



Grape Vine in pot.

with ripe fruit will form admirable subjects for table decoration. When fruit trees are received from the nursery in the winter and spring, they should be carefully potted in good turfy loam and well rotted manure, pressing it firmly round the roots and sides of the pot. They should then be given an abundant supply of water, and as the pots become filled with roots the loose soil on the tops of the pots should be removed, and a top dressing of loam and rotten manure in equal quantities added. After the fruit is set and swelling off, liberal waterings of liquid manure should be given, and the pinching in of the growing shoots, especially the strongest at the top part of the tree, should receive attention. Mulching keeps the roots cool, and lessens the labour of watering to a considerable extent.

OUTDOOR FRUITS.

The grounds here are very variable, both as regards aspect

and soil, which varies from a stiff loam or clay, to a light calcareous sandy soil, in both of which fruit trees and Roses succeed most satisfactorily. Plums are largely grown here for market, acres being planted with Rivers's Early Prolific which is bearing abundant crops. This Plum which was raised from a stone of the *Précoce de Tours*, is of medium size, and good flavour. It generally ripens about the end of July or beginning of August, and is a purple free-stone of great merit for culinary purposes. Amongst other fine Plums grown here



Pear tree in pot.

we may notice the blue or purple Belgian, a large richly flavoured fruit, very juicy, and useful either for kitchen or table use. The large Gage (McLaughlin's) is a greenish-yellow American variety, ripening about the middle of August, rich in flavour, juicy, and remarkable for its fragrance when fully ripe, a dish of the fruit being amply sufficient to give an agreeable odour to the room in which it is placed. The Transparent Gage is a fine Plum either for dessert or kitchen use, this and the old Green Gage (*Reine Claude*) being two of the best dessert Plums in cultivation for rich flavour and production. In addition to these all the finest well tried varieties are grown in quantity both for sale and fruiting for market. Apples and Pears are also largely grown here, the finer and tenderest varieties being double-grafted and cultivated in pots; these receive orchard house protection while setting their fruit, after which they are plunged and mulched out of doors in order to make room for pot Vines, Peaches, and other tender fruits. Concerning double-grafting, Mr. Rivers' remarks that many varieties require a stock closely allied to the same section or race, and cites, for example, the old Jargonelle, when grafted on the *Beurré d'Amanlis*, the union between them being nearly perfect, and the trees so worked being strikingly healthy and bearing very freely. Gansel's Bergamot is another that does well when grafted on a strong-growing variety of Pear on the Quince stock. Huyshe's Prince Consort, Huyshe's Victoria, Huyshe's Bergamot, all are found to do much better when treated like Gansel's Bergamot, these sorts being rather delicate in constitution, and apt to die off when grafted on the Quince stock alone. Among the Apples we noticed some healthy little bush trees of Cox's Orange Pippin (a beautiful dessert Apple of first-class merit), bearing large crops, and a few pyramids of the Norfolk Bearer, only two years from the graft, bearing two or three dozen fruit each. Some nice breadths of bush Apples, between two and three acres in extent, are grafted on the Nonsuch and broad-leaved Paradise. The great superiority of these stocks is that they keep pace with the scion, which does

not out-grow the stock so as to endanger the health of the tree. This stock is perfectly hardy and dwarf, and is raised in large quantities every year from seed, specially as stocks for dwarf, bush, or pyramidal Apples. F. W. BURBIDGE.

The Guava.—This is the only fruit that I know of that is improved in flavour and colour by giving it abundance of water and copious syringing when approaching ripeness. The fruit will set freely in a cold greenhouse or conservatory, and after it attains the size of a small Cherry it remains a long time without making any apparent progress. In this state it should be thinned; and as soon as it begins to swell it should have a temperature of 60° to 70°; syringing often and watering freely. Thus treated the fruit will swell to double its usual size, and will be much improved in colour and flavour, and form an agreeable addition to the dessert. The fruit will ripen in about three weeks after its removal to a higher temperature.—J. C.

Standard Fig Trees at Bath.—On the slope of a somewhat steep hill in Mr. Kitley's garden, at Bath, I observed several Fig trees growing and flourishing as standards, and bearing fruit abundantly. They were sheltered at the back by a steep bank, and in front by means of a row of Filberts. The soil in which they were growing is a light sandy loam, on a bottom of broken sandstone, in which their roots find moisture in summer when drought prevails above. The varieties consisted of the Brown Malta and the Black Ischia, which Mr. Kitley says are the only two sorts which he has found to do satisfactorily out of doors. They are of slow growth, stiff and stocky, and at every joint are produced Figs, which ripen well in September. All those larger than Peas that appear in the autumn are removed, for they never reach the perfection which those formed in spring and early summer attain. The trees are never protected in any way in winter, nor are they watered in summer; nevertheless, they continue year after year to produce excellent crops, and never require any pinching or pruning.—W. F.

GARDEN RECIPES.

AMERICAN BLIGHT.

TAKE half a peck of quicklime, half a pound of flowers of sulphur, and a quarter of a pound of lampblack. Mix with boiling water so as to form a thick paint. With this, in winter, when the leaves are off, paint the branches, having first removed all loose bark. Remove the soil from the bottom of the stem to the main roots, and paint the roots as far as they are exposed. The paint should be warm when used. When it has become dry, the trees should be looked over, and all cracks and holes stopped with well-worked clay. After frost the clay stoppings should be dressed again, to close any cracks that may occur. Ammoniacal liquor from gas-works, a solution of soft-soap, strong tobacco-water, and brine, may also be employed with success. Or, dissolve one pound of soda in a gallon of rain-water; shake this up in a vessel with a pint of spirits of turpentine until they amalgamate; add more water to make the quantity up to ten gallons. Apply to the trees with a garden-engine or syringe having a fine rose. Or, mix goose-grease and flowers of sulphur, together in the proportion of 8 oz. of the former to 2 oz. of the latter, and apply with a paint-brush. Train-oil and other fish oils have been used with success, but in applying these care should be taken not to touch the buds. Coal-tar, naphtha, and linseed oil, laid on with a brush, have also been used with good effect. Although we have had no experience of it ourselves, we may here mention an "infallible remedy" which has been forwarded to us from several quarters. This is petroleum or paraffin oil. Our correspondents inform us that it is sufficient to brush the infected trees once with a paint-brush dipped in this oil (pure), applying it to all the parts attacked by the insect.

ASPHALTE FOR WALKS.

The place intended to be asphalted must be previously levelled, then put on it a coat of tar, and sift some road-sand or coal-ashes all over it very thickly; after this is dry repeat the operation until you have got four coats of tar, and as many of coal-ashes or road-sand. You will then have an excellent, clean, dry, hard path. It will make excellent walks, or floors for sheds, out-buildings, &c., and will wear for many years. Or, take eighteen parts of mineral pitch, and eighteen parts of resin, put them into an iron pot, and place it over a fire, keep boiling a short time, then add to it sixty parts of coarse

sand, mix it well together, and lay it on the path to the thickness of an inch; then sift a little fine gravel over it, and beat it in before the asphalt sets. This is a more durable asphalt than the former, though it is much more expensive and more troublesome to form. Another good asphalt may be made with one part mineral pitch, one part resin, seven parts chalk, and two parts coarse sand. Boil them together, and lay it on in a hot state, adding a little gravel, as in the preceding case. Or, procure a quantity of road-sand, or similar powdery material, and let it be thoroughly dried, then sift out of cinder ashes the finer parts, and let that too be made thoroughly dry. Mix these materials carefully, in the proportion of two parts of road-sand to one of cinder siftings. Next provide an iron cauldron, in which coal-tar can be made boiling hot. In a dry place, on a dry day, spread a quantity of the sand and cinder siftings on the ground, as a bricklayer spreads his lime, making it hollow in the middle, and into that pour the hot tar; then incorporate the whole as in the operation of making mortar, and when a stiff paste has thus been formed, spread it over the ground on which the walk is to be constructed, the ground being previously levelled and beaten as firm as possible. Spread the mortar 3 or 4 inches in thickness, then powder it over with dry sand, after which a few passes of the roller will press it level, and the work is finished.

TO HARDEN ASPHALTE COVERING.

This must be done in summer, on a hot day, give a coat of coal-tar; this will dry in a few days: then boil tallow, pitch, and the tar together, in the proportion of one part tallow, three of pitch, and four of tar. Put this on on a hot day, and, if properly done, roofs or paths will require no further care for years. Ten feet square may be tarred with a sweeping brush in ten minutes.

BLIGHT ON FRUIT TREES.

When winter dressings have failed, and the pests appear in spring to such an extent as to endanger the crop, procure a quantity of ammoniacal liquor from gas-works, and to every pailful of the liquor add six of water, and boil as soon as possible in a large copper. Apply this in the evening, hot, with a syringe, drenching every part of the trees, and letting not a leaf escape. It should be used as hot as can be borne by the hand, and thrown with as much force as possible into all the crevices in the bark, on the under sides of the leaves, and splashed vigorously against the wall on which espaliers are trained. It may be used also for Roses and fruit-bushes, with the most certain benefit. Two days afterwards give another syringing with plain warm water. To clean the copper in which the mixture was prepared, fill it with water, throw in a shovel of cinder-ashes, and a pound of soda, and let it boil for half-an-hour.

BUG ON PINE-APPLES.

Boil a pound of tobacco in a gallon or two of water, for an hour or so, and when settled, pour off the liquor. Melt a pound of soft-soap and a pound of size or glue in warm water. Take a pound of flowers of sulphur, mix it up into a paste with the soap and glue, so that it will easily mix with water afterwards. Add to it one gill of turpentine. Mix the whole well in a tub containing about twelve gallons of water, at a temperature of 125° to 130°. Stir it well about, and continue stirring; then take the Pine plants, and syringe them with the liquid, root and top, seeing that every plant and every axil is thoroughly washed and wetted. Let them drain into a tub, and set them aside, top downwards, to drip and dry. In a day or two syringe them again with clear water at 120°; drain again, and when dry pot and plunge in a genial bottom-heat, after having thoroughly renewed the beds, and white-washed and painted, and thoroughly cleaned the house.

Poisonous Umbelliferous Plants.—At the field meeting of the Albany Institute, Dr. George T. Stevens gave a general rule in respect to distinguishing poisonous plants of the Umbelliferous order. He says it is safe to premise that any of these plants growing in wet places are poisons. He instanced a case where several children in one family were fatally poisoned by eating the roots of the Water Parsnip, mistaken for Sweet Cicely. On the other hand, the Caraway, Dill, Coriander, and Anise are examples of the whole, some, aromatic plants of this order, all growing in dry places.

MORE TREES IN THE LONDON STREETS.

Now that London trees are exhibiting all their freshest verdure, and with their moving lights and shadows giving such refreshing beauty and variety to every street in which they exist, no one can fail to observe the sad contrast of those thoroughfares and areas which are utterly devoid of that charming touch of pure nature which a single branch of green foliage never fails to impart even to the very blackest lines of London bricks and mortar. It is at the present season, therefore, that one should reiterate the oft-repeated petition—give us trees!

Only to name one of those wide West-end streets or roads which would be most improved by a line of noble trees, take the Bayswater Road, from the Marble Arch to the commencement of the narrowing road at Notting Hill. Here is a site for a grand avenue, not to be surpassed even by the great and spacious Boulevards of Paris. The spirited representation of one of the Parisian Boulevards, as given below, will convey a tolerably correct idea of our meaning. In the line of buildings, shown on either side, and those seen above them in the distance, will be found a great variety of fine architectural forms, from Hausmannian to Gothic, the effect

beautiful relief to the eye, the impression of the softening beauty being instinctively felt, even by such as are unconscious of the source of the pleasant influence which is cheering them on their way. It is said that in the very densest part of London there is scarcely a single street in which, from some part of its course, the branches of a tree may not be perceived peeping over some blank wall or enclosure, or enlivening the dank, dark, and dismal space behind some rusty iron gate; perhaps that of a deserted churchyard, or perhaps that of a once neat and well-kept garden attached to some thrifty merchant's counting-house in a street now utterly deserted by great city traders—the whereabouts of their habitations and offices having travelled farther north or farther west. There is a little planted churchyard in a most remote and out-of-the-way spot, on Laurence Pountney Hill, which at this time of the year is beautifully lighted up with young green foliage, fresh and bright for a brief existence of six or eight weeks, and which is truly "a thing of beauty," lighting up a dismal chasm among high-reaching dingy buildings, with such bright verdure, when the midday sun passes down through the young foliage, that each leaf seems a light-giving lamplet of the brightest and softest green. Let those who are sceptical or supine about the



A street planted with young trees.

of the whole of which is charmingly heightened by the presence of trees. This single example is sufficient to show what a noble effect might be created between the Marble Arch and Notting Hill Gate by an avenue of trees. They should not be allowed to form a monotonous row, all of the same kind, Elms or Horse Chestnuts, or Oriental Planes, as has been hitherto the too common custom, but should consist of various kinds of suitable free-growing trees, among which many of the nobler tree-forms of the American forests (many of them with magnificent pinnate foliage) might be selected, as several of them flourish freely in the London atmosphere. Of course the Horse Chestnut, the Elm, the spreading Poplars, the Oriental Plane, and even the Lime (though its foliage fades so early in London), should none of them be neglected: but there are grand American trees, too little known in our English plantations, as well as trees of other climates, which would in all probability succeed admirably; and if, after due trial, they failed, they might easily be replaced by other novelties; the kinds to select from being, instead of restricted in number, as some might suppose, so extremely numerous as to form a positive *embarras de richesse*. The charm of merely single trees, in some of the blackest and narrowest of the City thoroughfares, is felt at once in early summer to be a soft and

planting of trees in our spacious modern streets and roads in the new parts of London—west, north, and south—take a stroll in the City in the early days of summer, and make note of the charm of even a single tree in those smoke-coated streets and alleys; and they will be, or ought to be, converted at once to the desirability of planting trees in every street and roadway where there is really room for them to display themselves with advantage.

HOEL NUMPHREYS.

THE WALLFLOWER.

I WILL not praise the often-flattered Rose,
Or, virgin-like, with blushing charms half seen,
Or when, in dazzling splendour, like a Queen,
All her magnificence of state she shows;
No, nor that nun-like Lily which but blows
Beneath the valley's cool and shady screen;
Nor yet the Sun-flower, that with warrior mien,
Still eyes the orb of glory where it glows;
But thou, neglected wallflower! to my breast
And muse art dearest, wildest, sweetest flower!
To whom alone the privilege is given
Proudly to root thyself above the rest,
As Genius does, and, from thy rocky tower,
Lend fragrance to the purest breath of heaven.

T. DOUBLEDAY.

THE KITCHEN GARDEN.

SALSAFY.

THIS plant, originally a native of the Mediterranean region, has been long naturalised in Central and Northern Europe. It is a biennial of the Composite order, with long, narrow, tapering leaves, and a long spindle-shaped root, which, when cooked, has a remarkable flavour of oysters, and is one of our most delicious vegetables. To grow it crisp and white in flesh like the Parsnip, it requires a rich, deep, well-pulverised soil that has been well manured for some other crop the previous year. It should be trenched in autumn or early winter, and thrown up into rough ridges to sweeten and get well pulverised by seed-sowing time. The following spring the ground should be forked down on a dry day between the middle of March and first week in April; drills drawn a foot apart, and the seed dropped into them thinly; and the plants, after their appearance above ground, should soon be thinned in the rows from 9 inches to 12 inches from each other, and the ground should be kept thoroughly surface-stirred all the following summer. The return for this will be a crop of even, good-sized, clean-shaped roots, as large as a moderate-sized Surrey carrot. On rich, deep, well-prepared land, if the roots are required to be very large, it will be necessary to sow thinly, and have the plants a greater distance apart in the rows, with the addition of heavy manuring. By these means the object will be attained. If the manure be deeply buried, so that the tap root may run straight down to it to find it out—which it will do—the roots will grow as large as a good-sized Parsnip. If the manure is only buried shallow, and intermixed with the soil in digging, forking, or trenching, scarcely a straight, tapering, well-formed root will be produced; but a parcel of rough, forked, ill-shaped bunches of roots will pretty surely be the return. Although an old vegetable, long known and used in this country—and a very useful and good one too, for second course, served with white sauce throughout autumn and winter—nevertheless, it has not made that progress for culinary purposes it really deserves to have done. Since the Potato disease has been so destructive, it has got better known and more in use, but not to the extent it should have been, considering its usefulness as a vegetable that may be in constant use at least nine months in the year. It is one of the most valuable substitutes for the Potato, and a heavy weighty crop can be produced from any kind of soil. If prepared and managed as above directed, it would be a valuable root for a change at cottage gardeners' and tradesmen's tables. A few rows sown in an odd corner would produce many a good dish of wholesome food throughout winter. A plant or two placed in any corner for seed produces a succession of deep-purple flowers as pretty as those of many cultivated border plants. The roots can be taken up in autumn, and stored as Parsnips or Carrots, or left in the ground and mulched in winter.

J. BARNES.

The Potato Disease.—Many I dare say are now afraid of an outbreak of disease. I hear it has made its appearance hereabouts in some few Potatoes, but I have not myself seen the slightest speck of it as yet, in fact we have not had the sort of weather that generates it, and if the present dry winds, and sometimes warm sunshine continue, I do not think that we shall have much disease this season. Different localities, however, vary so much with respect to atmospheric changes that one place may suffer while another escapes. Twelve months ago the disease struck down all our crop; a dull muggy low atmosphere prevailed and carried the disease with lightning speed over the land. From the 9th to the end of July is the precarious time; but, as we are likely to have it dry and warm, I would prognosticate that we shall have little or no disease. If that should happen to be the case, it will be a decided proof that the evil is atmospheric and, if so, difficult of cure.—J. SCOTT, Merriott, Crewkerne, Somerset.

Tomatoes.—Now that the weather has got so warm, Tomatoes are growing vigorously; and whether they are tied to stakes in the open ground or against walls, they should, under no circumstances, be allowed to bear superfluous leaves or laterals. Indeed, the closer they are pinched after the fruit is set the better and larger the produce will be. To their roots the earth should be drawn in the form of a basin, for the retention of liberal supplies of water and occasional applications of liquid manure; and a mulching of decayed dung placed over their roots is very beneficial to them. I find that the old large red-fruited kind is the best and most profitable of the sorts grown by me; but I learn that there are ten different kinds on trial at Chiswick this year, the result of which I shall look forward to with interest.—T. MACD.

GARDEN DESTROYERS.

THE ROSE WEEVIL.

Apropos of your recent article on "Insects injurious to Roses," (see p. 26, Vol IV.) permit me to forward you the enclosed extract from Newman's "Entomologist" for this month:—

"I am not surprised that this insect is so little known to horticulturists, since it commits its depredations exclusively by night. I have received many inquiries and many proofs of its injurious operations, but not in a single instance a specimen of the insect, which is the *Otiorhynchus scabrosus*, of the family Curculionidae, a rough-coated and very hard beetle—indeed so hard that it is difficult to crush; it resides by day in the earth, and at night-fall crawls up the stems of standard Roses, and gnaws the rind off last year's twigs, preferring those which have been cut and left a few inches in length; sometimes the bark will be taken off in a circle, at others it is only nibbled in places, and thus made rough to the touch. I know of no remedy but hand-picking,—very tedious, certainly but efficient; take a basin of hot water and a lantern; and search diligently for the weevils just above the graft, pick them off one by one, and drop them into the water: they die almost instantly."

Is Mr. Newman quite correct in describing the "Rose Weevil" as *O. scabrosus*?—G. E., York.

Directions for sending Insects.—All letters desiring information respecting noxious and other insects, should be accompanied by specimens, the more in number the better. Such specimens should always be packed along with a little cotton, wool, or some such substance, in a paste-board box of convenient size, and never enclosed loose in a letter. Botanists like their specimens pressed as flat as a pancake, but entomologists do not. Whenever possible, larvæ, (*i.e.* grubs, caterpillars, maggots, &c.) should be packed alive, in some tight tin box—the tighter the better, as air holes are not needed—along with a supply of their appropriate food sufficient to last them on their journey; otherwise they generally die on the road and shrivel up to nothing. Along with the specimens send as full an account as possible of the habits of the insect, respecting which you desire information; for example, what plant or plants it infests; whether it destroys the leaves, the buds, the twigs, or the stem; how long it has been known to you; what amount of damage it has done, &c. Such particulars are often not only of high scientific interest, but of practical importance.—C. V. RILEY.

Another Insect Destroyer.—Mr. Cloëz, who is engaged at the Jardin des Plantes at Paris, has invented what he considers a complete annihilator for plant lice and other small insects. To reduce M. Cloëz's preparation to our measures, it will be sufficiently accurate to say, take 3½ ounces of quassia chips, and 5 drachms Stavesacre seeds, powdered. These are to be put in 7 pints of water and boiled until reduced to 5 pints. When the liquid is cooled, strain it, and use with a watering-pot or syringe, as may be most convenient. We are assured that this preparation has been most efficacious in France, and it will be worth while for our gardeners to experiment with it. Quassia has long been used as an insect destroyer. The Stavesacre seeds are the seeds of a species of Larkspur, or Delphinium (*D. Staphisagria*), and used to be kept in the old drug stores. Years ago they were much used for an insect that found its home in the human head; but, as that has fortunately gone out of fashion, it may be that the seeds are less obtainable than formerly. The Stavesacre seeds contain delphine, which is one of the most active poisons known, and we have no doubt that a very small portion of it would prove fatal to insects.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Ants.—My lawn is so dreadfully disfigured by Ants throwing it up here and there into little hillocks, that I shall feel obliged by some of your correspondents telling me how I can best get rid of them without destroying the Grass. I have been recommended hot water, but that would be worse than the disease, as it would destroy the Grass, and leave unsightly patches. My gardener has been trying black pepper with considerable success, but a wet day or two will test it as a remedial experiment.—T. J. A., Meadow Craft, Lower Sydenham.

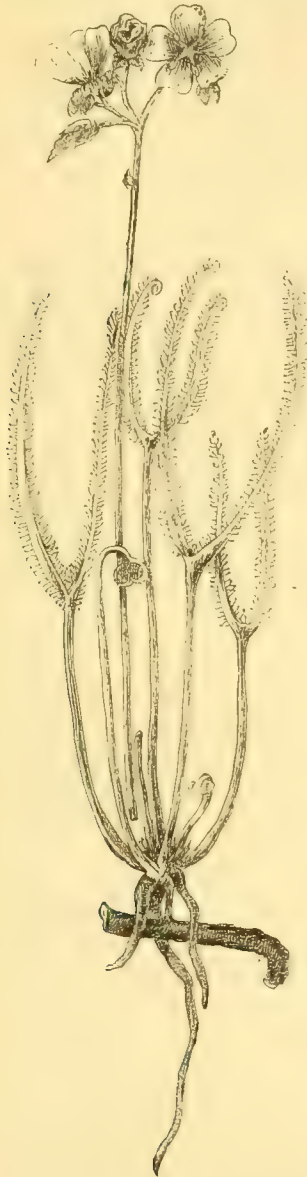
Grubs destructive to young Plants.—Can you give me any information as to the best means to use for clearing my garden from certain grubs, with which it is infested. They attack always every tender plant that is planted out fresh and eat it through just above the ground. I send herewith a few of the grubs that you may see them.—ROBERT JAMES, Grove Villa, New Southgate. [They are the larvæ of *Tipula oleracea* (Daddy long-legs); they work underground feeding (we believe exclusively) on roots; the grub that eats through the stems of young plants freshly planted out is the larva of *Agrotis segetum*, *A. tritici*, or *A. exclamationis*, all of them common moths.]

THE PROPAGATOR.

NOTES ON THE PROPAGATION OF DROSERA DICHOTOMA.*

By JAMES McNAB, ROYAL BOTANIC GARDENS, EDINBURGH.

THIS Sundew is one of those curious botanical plants rarely seen in cultivation. It is a native of Sydney, New South Wales, and notwithstanding that it has been introduced into this country for nearly thirty years, and then named *Drosera binata*, it still remains very scarce in British gardens. Hitherto the mode of increasing this remarkable plant has been by



Double-leaved Sundew (*Drosera dichotoma*).

subdivision of the crowns, which is done during early spring before the leaves unfold. This method of propagation takes time, as plants require to be some size before sub-division can be resorted to. Of late years attention has been directed to the root propagation of the *Ipecacuhana* and other rare plants, both economic and general. Mr. Robert Lindsay, the plant foreman in the Royal Botanic Garden, thought he would try to increase this curious Sundew by root propagation, and his efforts have been crowned with success. The roots for the purpose of propagation are generally taken from strong-growing plants during the process of crown-division. They

are of a clear black wiry consistency, and are cut into numerous pieces from half an inch, an inch, or more in length. These are laid on the surface of shallow earthenware pans or flower-pots, prepared with a mixture of sandy peat soil, and are covered about half an inch deep with the same mixture. They are then covered with a bell-glass, and are placed in a damp warm propagating house. In the course of a fortnight, swellings begin to appear on the surface of the detached roots, which increase in length till they reach the surface of the soil. This generally takes about five weeks after being put in. When the leaves become developed, they are mostly of a binate form, and soon cover the surface of the pan as if they had been a crop of seedlings. When about 2 inches or so in height, they are separated and put into small pots, in a similar mixture of soil to that into which the roots were originally placed, with the addition of some chopped sphagnum Moss freely mixed through it. If carefully attended to, they soon make excellent plants, and are eagerly sought after on account of their peculiar appearance.

This Sundew may be grown to a large size, and will flower abundantly, either under basket culture in Sphagnum Moss or in pots covered with Sphagnum and placed in a damp but sunny situation or in shallow pans of water. It thrives well in a greenhouse, or in cool glazed pits, placed near the glass. It also succeeds in the rock garden, where a flat saucer is sunk below the pot to prevent the moisture from escaping. In such a situation it was kept alive during the winter of 1871, merely by having some loose leaves thrown over it. Under open air culture, however, the plants generally become quite black with dust and insects, in consequence of the quantity of secretion given out by the leaf glands.

The genus *Drosera* contains many beautiful and unintro-duced species, many of them very remarkable in habit, particularly the climbing forms. They are chiefly natives of New South Wales and the Cape of Good Hope. Some of the species have very large flowers, such as the *Drosera capensis* and *D. cistiflora*. If these or other allied species can be introduced into our gardens, it is likely that they will submit to root propagation like the *D. dichotoma* now under notice. The first species introduced from Sydney to Kew was named *Drosera binata*, having each leaf once forked. Judging from the figure of this plant in the *Botanical Magazine*, it must have been drawn from a weakly specimen, as the flowers are small compared with those which the *D. dichotoma* produces. In cultivation, this plant seems to vary much; the original binate form has, no doubt, become dichotomous, and can also be reversed. In proof of this, several of the plants now in the garden have their leaves binate, although produced from the dichotomous form by sub-division and root formation, while some plants have their leaves divided into two, three, four, and five parts on the same individual. These circumstances satisfy me that both these hitherto supposed species are but one and the same, and as the dichotomous form is the most prevalent, it ought to retain the name.

Since writing the above, I find Planchon in his excellent paper on the *Droseraceæ*, published in the *Annales des Sciences Naturelles*, makes the *D. binata*, *D. dichotoma*, *D. pedata*, *D. intermedia*, and *D. Cunninghamii* all synonymous of each other. He also states that the leaves are often various on the same specimen, a fact confirmed by the specimens in the Botanic Garden.

***Aralia japonica* (Sieboldi).**—Now, when this fine plant is so much cultivated, it may be well to say something about the best mode of propagating it. Raising it from seed is both a slow and precarious process, and some quicker method is necessary. It can be increased from cuttings of the roots, after the same fashion as *A. papyrifera*, as cuttings of this last strike freely on a gentle bottom heat. The thick roots should be cut into pieces of from 1 inch to 2 inches in length, and then laid flat in pans or pots of light soil, well drained, and covered about half an inch or so with the soil, and finally with a slight covering of silver sand. Such cuttings by no means root uniformly as to time, but somewhat irregularly; and as the plants become strong enough they should be removed from the striking pans and placed singly in pots, be kept in a close warm frame until the roots reach the sides of the pots, gradually hardened off till they will bear removal to a cool place, and then be grown on in larger pots as required.—D.

* Read at the July meeting of the Botanical Society of Edinburgh.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—The brilliant weather which we are now experiencing will very shortly cause Pelargoniums to form seed-pods, especially such as are in vases; such pods must, however, be at once removed, as well as all decaying flowers. Regulate, too, the growth of rampant-growing varieties, by removing, for purposes of propagation, all straggling shoots, which will now strike freely if inserted on a warm border. Verbena cuttings, which may now be had in abundance, will strike well in a cold frame, densely shaded for a time. Petunias, straggling sorts of Mesembryanthemums and Pelargoniums, Fuchsias, &c., will require pegging down as they advance in growth. Fuchsia Sunray, a new tricolor sort, is one of the most effective bedding plants which we possess. Alternantheras have filled up their space well, and must now be kept within bounds by pinching, but do not attempt to propagate them for winter's stock until next month, for the more vigorous the shoots are the quicker they take root. The Golden Feverfew, Thyme, and other carpeting plants require vigilant attention in the way of cutting or clipping to keep them in order. Decapitate Lilies as soon as their beauty is over, but permit the stems to remain intact. Gladioli require staking or supporting with rope-yarn or string, and Dahlias and Hollyhocks require occasional tying to their stakes. Cut out the points of Hollyhocks when the plants are 6 or 7 feet high, so as to invigorate the blooms on the lower portion of the stem. Stake Carnations and Picoetes. Prune hedges of all sorts, and keep edgings of various kinds in good trim. Such hardy plants as the variegated Spiræa Ulmaria, Cerastium tomentosum, &c., should have all flowers removed, so as not to destroy the beauty of the leaves. Proceed with the budding of Roses, taking care not to cut away too much of the Briar shoots.

Conservatories.—The usual tying, thinning, and training of climbing plants require attention, and abundance of water must be given to all plants in active growth. Such as are in bloom should be shaded from bright sunshine, in order to preserve the colour of their flowers. Transfer all Camellias that have made good firm growth and set their flower-buds from the conservatory to a sheltered position out of doors, and re-pot any young plants that require shifting. Hard-wooded plants in pots of various sorts are best plunged out of doors in a sheltered place in a bed of ashes.

Greenhouse Plants.—Zonal Pelargoniums cut back a month ago should be shaken out of the pots which they now occupy, and be re-potted in fresh compost, well watered, and brought into flowering condition for autumn decoration. Feed Lilies and Erythras liberally with manure-water until they come into bloom. Prick out early-sown herbaceous Calceolarias, keeping them shaded from the sun, and sow some more seeds if necessary. Pot singly suckers from old stocks of Cinerarias, and also seedlings, and keep the plants in a cool frame with a north aspect. Chinese Primulas from seed or cuttings require to be shifted according to circumstances, and they should be set in a cool, moist part of some greenhouse or pit. If plants of Campanula pyramidalis grow too strongly to stand alone, a stake may be applied to each plant. Shift young Cyclamens, and keep them near the light; old plants of them must not be permitted to become quite dry or their vigour will soon become impaired. Of Petunias, Balsams, Celosias, Lobelias, Fuchsias, Achimenes, Schizanthuses, Heliotropes, Mignonette, Hydrangeas, &c., keep up a regular and unailing stock. Of Coleuses, variegated-leaved Begonias, Iresines, Amaranthuses, &c., have also a good stock for intermingling with flowering and green-leaved plants. The herbaceous hybrid Begonias furnish an ample supply of bloom at this time of year; the treatment which they require is not different from that given to Balsams, and when in bloom they should be set in a shady part of the greenhouse, free from draught. Mimuluses that have bloomed early, either in pots or out of doors, should now be potted afresh in a rich soil, placed in a frame having a north aspect, and liberally watered, and they will furnish fine flowering plants in autumn. All Chrysanthemums should be kept plunged out of doors in ashes, mulched with manure in the form of a basin, and also liberally supplied with manure-water occasionally, and clean water overhead. In order to have dwarf plants, some of the points of the shoots of old Chrysanthemums may now be propagated. Grasses of various sorts have a fine appearance amongst other greenhouse plants, and may now be sown for late use; former sowings should be thinned; a light rich soil suits Grasses best, and the various sorts of Brizas are the most suitable for indoor culture.

Stoves.—In these there is at present more foliage than flowers, and the leaves of the variegated Pine Apples, Dracænas, Crotons, and similar plants have a pleasant and pretty effect. Gesneras, Gloxinias, Allamandas, Gardenias, Ixoras, Francisceas, &c., constitute the bulk of blooming plants. Keep young Palms, Ficuses, Ferns,

and the stock of young plants in general in a brisk and steaming heat, shading the houses at the same time well. Established plants however, must not be subjected to such exciting treatment, otherwise they will not winter satisfactorily. Artificial heat may be economised by shutting up early; indeed, fire-heat might in many cases be almost entirely dispensed with while the weather continues so warm. Encourage the growth of Poinsettias, and Euphorbia jacquiniæflora, and keep the plants near the glass. Dipladenias, Stephanotis, &c., should have their shoots trained along immediately under the glass roof, so as to ripen their wood. Rooted cuttings of Ixoras, Azaleas, Ficuses, Crotons, &c., may be potted singly and encouraged to make good roots before the summer is over.

Indoor Fruit Garden.—In Pine pits abundance of moisture must be given to the plants, and spilt about the floors and walls, so as to saturate the atmosphere, but where the fruit is ripening the supply of water must be very moderate. If sun-heat is economised there will be little use for fire-heat, except now and then to dry up stagnant moisture. Take off all strong and healthy suckers, pot them firmly, and plunge the pots in a pit of fermenting material; after potting, keep the plants shaded for a few days. On all Vineries a little air should be left night and day, no matter whether the Grapes are swelling, colouring, ripe, or have been cut; and in order to prevent a too great decrease of temperature at night, fire-heat, in some cases must be resorted to. Spill plenty of water on the paths, stages, and walls, and see that inside and also outside borders do not get too dry. Young Vines may now be shifted into their fruiting pots. Figs require plenty of water at the root as well as overhead, and a liberal supply now and then of manure water. Peaches and Nectarines must be well syringed before the fruit is ripe and after it is gathered, and encourage the ripening of the shoots by a free circulation of air and plenty of light. Melons ripening must only be kept moderately moist, so as not to burst the fruit nor impair its flavour, but feed well such as are swelling. Plant out at once, if not already done, Melon plants for late fruiting. Do not overcrop Cucumber plants, nor encumber those bearing usable fruits with ripe fruits. It is better to have a plant or two specially for producing fruit for seed, than to injure the others in that way. Get Strawberry runners for next year's forcing into their fruiting pots, which should be plunged in a bed of ashes.

Kitchen Garden.—Transplant Broccoli, Cauliflower, and Cabbages wherever space can be found for them. Sow some Green Coleworts and early Cabbages for winter and spring use, and thin out in the seed-beds Cauliflower that is to form the main late crop. Top the main crop of Beans when they come into flower, and earth up and stake young crops of Peas, which should have abundance of water if the weather continues dry. Early Peas, Cauliflower, and Cabbages may now be cleared away, and their space filled up with Celery, late Turnips, Onions, &c. The ground containing spring-transplanted Onions, early Potatoes, and Carrots, will be in fine condition for the Brassica tribe. Sow some Tripoli Onions and early Horn Carrots for drawing young, likewise some Radishes, Lettuces, Endive, and Spinach, and small salads, according to the demand. Pinch off all laterals from Tomatoes, and well expose the swelling fruit to the sunshine. Water abundantly vegetable and Custard Marrows, and do not permit the fruits to remain on the plants after they are fit for use, as that considerably injures the rest of the crop. Maintain cleanliness and neatness in all departments, save all refuse vegetables for the manure heap, and repair frames, tools, sheds and other garden appliances.

MARKET GARDENS.

The warm weather which we are now experiencing is bringing crops forward quickly. Cabbage, Cauliflowers, Onions, Globe Artichokes, Vegetable Marrows, Peas, Beans, Potatoes, Lettuces, Carrots, Beet, Turnips, Radishes, Cucumbers, and French Beans (those nursed in spring), constitute the bulk of vegetables at present fit for market; while among fruits there are Currants of different sorts, Raspberries, Gooseberries, Cherries, and Green Apples. Get off all refuse Cauliflowers and Cabbages, plough the land, and sow Turnips, Spinach, or plant out Celery and Lettuces. If these crops are unsuitable, perhaps it may be advisable to plant Cauliflower or Broccoli again, for although this is not the best course to follow it is sometimes unavoidable, especially in dry localities where water is scarce. Keep Tomatoes well pinched and watered, and frequently go over and thin Cucumbers. Peg down rampant Vines of Vegetable Marrows, and top Scarlet Runners. Transplant the stocks of Cabbages that were saved from amongst the spring crops, for seeding purposes. They will bloom and seed next year. Such Peas as were not picked when in good usable condition should now be preserved for seed, and the haulm should be turned over in the rows, so as to prevent rotting and to assist maturation. All "running" plants of Carrots, Parsnips, Onions, Beet, &c., should be removed as soon as

perceived; for if allowed to come into flower, the roots will be useless for market. From the 25th of this month to the 10th of August is the general time for sowing winter greens; but a good deal depends upon soil and place. In a rich soil where strong and soft plants are soon produced much of the produce will run to seed next spring, but where the soil is rather poor, the young plants come up more robustly and are not so liable to run.

SOCIETIES, EXHIBITIONS, &c.

GLASS STRUCTURES AND IMPLEMENTS AT BATH.

Hothouses abounded at Bath, as did also garden engines, syringes, garden seats, and watering pots. There were also several novelties, Mr. Cowan, with much spirit, bringing over a model, half the size of the original, of his method of heating without cost, by means of placing a boiler over a lime-kiln, instead of over a common furnace, thus utilising the heat generated by the conversion of lime-stone or chalk into caustic lime. Wherever 6 or 8 feet can be commanded under the boiler, there is little doubt that this mode of heating will be found to be a useful aid to the saving of fuel in all places where chalk or lime-stone is near at hand and readily accessible, and lime can be sold at a fair price. The latter is important, for, unless a market can be had for the lime, sufficient profit cannot be made to provide heat gratis. But even were this not possible, doubtless a considerable saving of coal would result from the adoption of Mr. Cowan's method. Mr. Rendle's pavilions constituted another novelty. One of these, 200 feet long, 15 feet wide, and 12 feet high, furnished space for the exhibition of fancy goods that could hardly have been shown under canvas. The whole was said to have been erected in thirteen hours, and though the wind was so strong on the first night of the show that a staff of men were on duty all night strengthening the different canvas tents, this pavilion stood firmly, and did not, as far as we could learn, lose a square of glass; thus standing a test that few hothouses with front or sides out would have stood; for these pavilions, it must be borne in mind, are simply glass roofs with open fronts. The glass can be put in these roofs as fast as a man can handle it, and it remains secure in its metal grooves. The whole of Mr. Rendle's other inventions, from grooved bricks for the growth of winter salading, protectors of all sorts and sizes, up to houses for fruits and plants, at once substantial, serviceable, and cheap, were arranged along the back of this long pavilion, and seemed to command much attention. One more novelty at Bath—though seen before at the opening show of the Alexandra Palace—was Mr. Horley's method of glazing with strips of leather and iron buttons, in lieu of putty or felt, and covering bars, as in Beard's patent system. Another novelty in glazing was also illustrated by a small house at Bath, exhibited by Mr. Pincher, of Market Lavington, Wilts. Each rafter of the roof resembles a shallow iron water trough. It differs from that, however, in being cast with grooves on each side. Wrought iron studs are placed on the moulds at distances corresponding to the length of the squares to be used in glazing, and cast with the rafters. These are bent over the glass, and hold it firmly in position. The grooves being, however, first filled with putty, and the glass squares bedded on to it, the whole roof is thus composed of an unbroken series of glass, interlined with channelled rafters, over which the glass slightly projects. This pitches all the water into them, unless what runs to the bottom in the usual way. This roof is water-tight, wind and weather proof, and can be erected at about 1s. 3d. per square foot. Local manufacturers were, as a matter of course, strongly represented on this occasion, Messrs. Tuck & Pike, of the City Metal Works, Bath, making perhaps the largest display. The Tortworth conservatory was an elegant house, the joints being made without putty, the glass left free for expansion, and warranted "not to drip." The same firm also showed other houses, a lean-to greenhouse, an amateur's house, and a pretty umbrella-shaped house, christened "The Luxuriosum," admirably adapted for a permanent tent—the centre of a Rosery—&c. The same firm, likewise, showed samples of glass walls, garden seats, chairs, table stands, canopies, patent boilers, lawn mowers, rollers, &c., innumerable. Mr. Parham, of the Northgate-Street Works, Bath, showed among other things, a nice range of his patent hothouses in three divisions—the centre an elegant conservatory or Orangery, a 40-foot span, with hipped roof, and a wing on either side 30 feet long, for greenhouse or Vinery. Mr. Parham also exhibited smaller houses, Peach walls, glass copings, pit lights, ground Vineries, plant preservers, &c., all glazed on his patent principle, described in our columns last year.

Mr. Diplock, of Queen Street, Bath, had patent boilers and hot-water apparatus, which seemed economical and efficient. Messrs. Messenger, of Loughborough, exhibited some good houses, a covered Peach wall, &c., good examples of their useful houses and frames; also their patent boiler, which affords peculiar facilities for the removal of sediment—a most important matter in economical heating. Messrs. Dennis & Co., of Chelmsford, had good illustrations of their manufacture in glass orchard houses, good amateur's greenhouses, also a wrought-iron house, and their patent adjustable boiler. The Messrs. Humphreys & Co., of Nottingham, showed a nice conservatory and greenhouse, and a portable greenhouse, all illustrating their improved method of ventilation. Messrs. Cranston & Luck, of Birmingham, showed a patent greenhouse, wall protector, &c., illustrating their method of dry glazing, ventilating, &c. Mr. Lloyd, of Grantham, showed his portable villa

conservatory, a portable dwarf span-roofed greenhouse, with improved ventilation. Mr. Voice, of Hadcross, furnished his useful ground Vineries or pits, the tops of which can be raised on either side by simply turning a handle. Mr. Tillett, of Stamford, had a large exhibition of Gilbert's registered hand-lights and plant protectors of improved construction. Messrs. Boulton & Co., of Norwich, had a large display of their garden frames, protectors, hand-lights, garden seats, watering pots, lawn mowers, &c.—perhaps the largest stand in the exhibition, with the exception of that of Messrs. Tuck & Pike, of Bath. The Messrs. Deards, of Harlow, Essex, exhibited their small greenhouses, and their useful heating apparatus in action. Mr. Horley, of Teddington, Dunstable, furnished his useful garden frames, plant houses, Fern cases, &c.

Several of the great London firms that were absent from Birmingham, put in an appearance at Bath. Messrs. Weeks & Co. exhibited boilers, a number of drawings of hothouses. The same firm had also some good examples of their patent duplex indestructible boilers, which have proved their power and efficiency in so many large establishments throughout the country. Among other merits, these boilers can be cleaned thoroughly without displacing the brickwork. Mr. Henry Ormson, of Stanley Creek, Chelsea, showed a specimen of his general workmanship, in which the glazing is done in grooves filled with putty, thus fixing the glass securely without exposing any body of putty to the atmosphere. The under edges of the rafters are also grooved, to carry off condensed moisture. Mr. Ormson also showed one of his excellent convoluted wrought-iron boilers, in which the flame has to hug the metal through a series of convolutions until its heat is exhausted. Another London firm—Mr. W. H. Lascelles, of the Finsbury Steam Joinery Works—made a large display of wooden hothouses, including a roomy span-roofed conservatory, half-span wall cover, glass coping, an angular orchard house, &c., strong substantial-looking houses, with an apparent excess of timber in them. The Thames Bank Iron Company had a large exhibition of boilers, prominent among which was the Gold Medal boiler, the wrought iron riveted saddle boiler, common saddle and compound tubular boilers of various kinds. Mr. Lumly, of Bath, and Messrs. Tuck & Pike, of the same city, showed patent Excelsior boilers; Messrs. Diplock & Co., of Bath and London, numbers of saddle boilers; Mr. Barlow, his tubular boilers; and Messrs. Jones & Rowe, the Whitly Court Boiler, that is obviously able to do any reasonable amount of work without flinching, a 4-foot boiler being warranted to heat 3,500 feet of 4-inch pipe. Mr. Harlow, of Macclesfield, also showed his hot-water apparatus with patent connection. Others have already been named. Mr. Pinchin showed one of his greenhouses heated without a boiler at all. He uses hot air for bottom as well as top heat, charging it with the necessary moisture by causing it to pass over and through water.

Among miscellaneous exhibits, which were the most numerous, were the rustic summer houses, plant stands, seats, vases, &c., shown by Mr. Henry Inman, of Rose Bank, Stratford, near Manchester. These are substantial and handsome erections, made of garled and knotted woods, varnished, and varying in price and size to suit the wants of all. Mr. Matthews, of Weston-super-Mare, had a large stand of excellent pots, vases, &c., including the Oxford pot, which has its rim pierced with holes to permit of plants being trained without so many stakes. Messrs. Bell and Thorpe showed their patent indestructible labels, which are suitable for all purposes where indestructible legible labels are required. Mr. Benjamin Edgington and Mr. Unite exhibited specimens of tents. Messrs. Carter, of Holborn, had an immense tent full of roots and seeds alike in bags and pots, the latter illustrating the per-centage of germinating power, which seemed in most instances to be very great, as the pots were crowded with young plants. Mr. Doulton, of Lambeth, sent pedestals and vases, and Mr. King, of Manvers-street, Bath, Bath-stone garden vases and monuments. Mr. James House, of Market Lavington, furnished a patent root extractor, apparently a useful contrivance. Mr. Stiles, of Peckham, Surrey, showed walnut Fern cases, window boxes, and other articles. Mr. Busee, of Hatton-garden, furnished patent charcoal pots, filters, &c. Messrs. Holmes and Co., of the Marley Wharf, Bath, samples of furnace bars, surroundings of various sorts for horticultural and other purposes. Mr. Pinnel, of 13, Burton-buildings, Bath, showed the oval watering-pot with the French spreader. Mr. Chapman had *multum in parvo* plant, flower, fruit, and game preservers, for the safe transmission, fresh to any distance, of these and other perishable commodities. Messrs. Davis and Co., of Newington Butts, had a large stand of barometers, thermometers, botanical microscopes, &c., Mr. Townsend, of Saffron Waldron, a reverse action clipper for trimming grass edgings; Messrs. Watts and Co., of Bristol, their universal fumigator and asphyxiator for the destruction of vermin; Mr. Kerr, of Dublin Gardens, water barrows, &c.; Mr. Watts, of Brompton Road, his half circular and other flower tables, so useful and ornamental in the large conservatory at South Kensington; Mr. Parker, of Woodstock, showed improved dry earth closets, ranging in price from £2 11s. to £5 5s.; the British Waggon Company made a large display of water-carts, pots, rollers, lawn mowers, archways, garden chairs, syringes; Messrs. Follows & Bate showed excellent examples of their lawn mowers; and, finally, we note, as good news for housekeepers, during unfrosty winters, that the refrigerators exhibited by Mr. Joseph Haines, of Stoke, render the art of making ices without ice simple and easy; and to horticulturists with troublesome boilers, or a paucity of pipes, and who, in consequence of either, have to sit up late or rise early in the morning, Mr. Pinnel offers a gas kettle that will boil a pint of water in five minutes, just enough for a cup of tea or coffee. But how is gas to be obtained in country places? Why not use a spirit or mineral oil lamp instead, and allow a few minutes more time in consequence?

ST. ANN'S ROSE SHOW, NOTTINGHAM.

THIS show, which is held annually, is the direct result of the spirited manner in which the working classes of Nottingham have taken to high-class gardening, and it is satisfactory to know that the Corporation of Nottingham are doing all in their power to encourage such a taste among the people. Fifteen acres have been recently broken up to meet additional requirements. This land has been brought under cultivation with the greatest rapidity, and in the summer evenings the occupiers may be seen on the hill side working at their tasks like so many ants. It was owing to the success of some of the Rose growers in some of the older gardens that the project of the formation of a horticultural society was brought under discussion, and a dozen years ago this society began its existence. It has from the first been managed in the most creditable manner by a body of working men, and has received the support of all classes in the town, the Corporation having itself given £10 for prizes during the past year. The show itself, as a popular gathering, is exceedingly in favour with the people, and has, in fact, earned the name of "St. Ann's Wakes." Last Monday's meeting was no exception to the rule, the grounds being crowded with visitors during the later portion of the day. The show embraced a grand display of Roses, greenhouse plants, flowers, fruits, and vegetables in season; and the prizes exceeded in amount those given in former years.

FLORAL DECORATIONS IN BALL ROOMS.

THESE evidences of social refinement are certainly on the increase and, under the direction of our best decorators, are now brought to a high degree of perfection. Bridgewater House the other night, and also the conservatory and arcades of the Royal Horticultural Society at South Kensington, as arranged by Mr. Wills, on the occasion of the Prince and Princess of Wales's visit, were marvels of floral beauty. When it is remembered that our largest decorating firms use from 20,000 to 30,000 decorative plants every week during the London season, we can form some idea of the extent to which plant decoration is now carried. One novel feature in modern decorations is the introduction of huge blocks of ice, which, either in the shape of a simple obelisk 3 or 4 feet high, or in imitation of massive rock-work, have a unique effect when fringed with Ferns, and draped with the slender-growing sprays of different kinds of trailing plants. On every hand are found pleasing groups of rare exotics, judiciously arranged as regards picturesque effect. Here is a bank of fresh Selaginella, forming a carpet, from which little groups of the Umbrella Sedge spring like miniature Palms; while here and there may be seen more massive succulent plants in association with fairy-like Grasses and Maiden-hair Ferns that tremble with the softest breath of air. Here, too, are masses of Palms and tree Ferns that spread their bright green feathery fronds over priceless groups of antique sculpture, while soft masses of harmonious colour nestle here and there on cool green banks of Ferns and Mosses. Handsome mirrors, half-concealed by tasteful fringes of trailing plants, increase the effect by apparently augmenting the space. At Bridgewater House glowing crimson masses of *Spiræa palmata*, admirably set off with fresh green leaves, were highly effective beneath the subdued gaslight; while slender Palms sprang from cool beds of Club Mosses, on which delicately perfumed sprays of pearly-white Stephanotis and Water Lilies rested in rich profusion. Here climbers drooped from every bracket and ledge, graceful in form and soft in colour. Bouquets of choice exotics were here and there suspended beneath the crystal brackets and chandeliers—in short, every lobby, hall, and corridor was tastefully furnished with foliage plants and flowers. Stately groups of *Dracænas*, and noble foliage Palms harmonised well with the massive cool grey marble shafts and columns that support the corridors and galleries overlooking the saloon. The saloon itself was likewise tastefully fringed with banks of choice Palms, Ferns, and flowering plants. At South Kensington the decorations, though essentially similar in many respects to those just noticed, were carried out on a much larger scale. The Rockery in the conservatory formed of several tons of the finest ice was a novel feature, and the centre of attraction during the evening. It was tastefully ornamented with choice Ferns, Grasses, and succulent plants, and fringed at the base with Maiden-hair Ferns, *Lomarias*, *Pteris serrulata*, and *Isolepis gracilis*, on a deep crimson ground. The western arcade was tastefully bordered with Palms, Tree Ferns, and choice flowering plants and the introduction of cool obelisks of ice at intervals, considerably heightened the effect. Not the least interesting features of the evening were the magnificent bouquets presented to the Princess of Wales and the Czarevna. These were remarkable for elegant simplicity, being composed of but a few of the choicest flowers, among which were softly-tinted Tea Roses, pure white Gardenias, half hidden among the most elegant drapery of fresh green Maiden-hair Fern, sprays of pearly Stephanotis and Tuberoses, the whole forming a charming collection of sweet-scented flowers.

F. W. B.

TREES STRUCK BY LIGHTNING.

ON Saturday, about five in the afternoon, during a severe thunder shower, a large Oak tree in Goss Wood, belonging to Earl Fitzwilliam, was struck and rent from the top to the bottom, completely divesting it of bark. The tree measured nearly seven feet round.—On Tuesday afternoon, a large Elm tree in the garden of Mr. Hawkins, at Yarton, Oxfordshire, was struck by lightning. The tree had a clear stem up to the first fork, more than 30 feet high. The lightning apparently left the branches untouched, and struck exactly in the fork, where the electric fluid divided; the main current going down the eastern side of the tree tore a strip not only of the outer bark, but of the inner rind, the latter three quarters of an inch thick from the fork to the base of the trunk. The bark and rind thus ripped off is of a breadth of from 5 to 10 inches, and is ripped completely out in a perpendicular line, slightly waved, the whole 30 feet of the height, part of it being thrown more than 20 feet from the tree. The remainder of the electric current seems to have passed down the western side of the tree, ripping the bark open at the top, then apparently touching and scarring from point to point, was at last wound round the tree, and finally cutting a jagged path about 4 feet long in the bark, like what a large bullet would cut, joined the other current about 4 feet from the ground. All trace of injury ceases at the ground, and there is not the slightest sign of any burning. In fact, the whole gives simply the appearance as if some giant power had raised a piece of the bark and inner rind at the top of the tree, and then tore the strip down from top to bottom.

OPENING OF STAMFORD PARK.

THE Earl of Stamford and Warrington has just formally opened Stamford Park for the inhabitants of Ashton-under-Lyne, Stalybridge, and neighbourhood. Some years ago the late Mr. Samuel Oldham, of Ashton, besides other bequests for the benefit of the district, left a sum of £7,000 towards the endowment of a public park, the interest of which money was to be devoted to several infirmaries near Manchester until lands should be obtained and laid out for a park. Recently an estate, known as the Highfield estate, consisting of a mansion and about 9 acres of land, lying between Ashton-under-Lyne and Stalybridge, was purchased by Mr. Darnton, solicitor, of Ashton, for the sum of £2,000, which estate has been conveyed by him to the park committee for the same amount; but Mr. Darnton has generously returned £500 out of the purchase-money as a subscription towards the park. The Highfield estate was subject to an annual chief or ground-rent of £131, payable to the Earl of Stamford, which rent his lordship has consented to remit. His lordship has also given a tract of valuable land of about 35 acres in extent, to add to the Highfield estate. This gift of land is estimated to be worth upwards of £10,000, and the remission of the ground-rent before mentioned, is regarded by the inhabitants as a princely gift. Besides the £7,000 bequeathed by Mr. Oldham, from £7,000 to £8,000 have been subscribed, for the purpose of laying out the park, of which sum £2,000 has been given by Mr. F. D. Astley (the lord of the manor of Dufkinfield), whose estate adjoins that of Lord Stamford. The opening of the park was made the occasion of a great demonstration.

COVENT GARDEN MARKET.

JULY 25TH.

Among flowers there is a good supply of Cockscombs, Japanese Lilies, *Kalanthes*, shrubby *Calceolarias*, *Pelargoniums* and *Hydrangeas*. Fruits in season, both English and Continental, are coming in in large quantities; but, notwithstanding their abundance, good articles still meet with a ready sale at high prices. Vegetables of all kinds are excellent, and among them waggon-loads of Scarlet Runners have been brought into the market this week.

Prices of Fruits.—Apples, per doz., 6d.; Apricots, 2s. to 4s. per doz.; Cherries, per lb., 6d. to 1s. 6d.; Chillies, per 100, 2s.; Currants, per sieve, 3s. to 5s.; Figs, per doz., 3s. to 10s.; Gooseberries, per quart, 3d. to 6d.; Grapes, hot-house, black, per lb., 2s. to 6s.; Muscats, 5s. to 8s.; Lemons, per 100, 8s. to 14s.; Melons, each, 2s. to 6s.; Nectarines, per doz., 6s. to 15s.; Oranges, per 100, 10s. to 16s.; Peaches, per doz., 12s. to 25s.; Pears, per doz., 1s. to 2s.; Pine Apples, per lb., 3s. to 6s.; Raspberries, per lb., 4d. to 1s.; Strawberries, per lb., 6d. to 1s. 6d.; Tomatoes, per doz., 1s. to 3s.; Walnuts, per bushel, 6s. to 10s. ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 3s. to 6s.; Beans, Kidney, per half sieve, 3s., broad, 2s.; Beet, Red, per doz., 1s. to 2s.; Cabbage, per doz., 1s. 6d. to 2s.; Carrots, 4d. to 8d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 4s.; Cucumbers, each, 4d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horse-radish, per bundle, 3s. to 4s.; Leeks, per bunch, 4d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 4s. to 6s.; Button, per quart, 6d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 9d. to 1s. 6d.; Potatoes, per bushel, 4s. to 7s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsify, do., 1s. to 1s. 6d.; Scorzoneria, per bundle, 1s.; Shallots, per bunch, 6d.; Spinach, per bushel, 3s.; Turnips, 4d. to 8d.; Vegetable Marrows, per doz., 1s. to 2s.

THE GARDEN.

"This is an art
Which does mend nature: change it rather; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

MY ORCHARD HOUSE.

OUR valued friend Mr. Rivers informs all lovers of fruit culture that his "orchard houses are now in great beauty, all the trees being wonders of fruitfulness and health." I wish I lived near enough Sawbridgeworth to feast my eyes on them; they would be to me a welcome and delightful sight. Instead of this may I offer your readers a brief account of my own experiences of an orchard house on a large scale, in one of our northern countries, where the nightingale is rarely heard. Ours is a very capricious climate; our long, dreary winters, and late spring frosts, often blight the fond hopes of enthusiastic amateurs. We owe a deep debt of gratitude to men like Rivers, Pearson, and others whose art has supplied the shortcomings of our climate, and created under glass in spite of adverse skies, a fair spring, which no rough winds, no chilling frosts, can destroy or even impair. When my orchard house was first built, I looked through the different catalogues and thought it necessary to stock the place with every description of fruit named therein. Contemptuously ignoring the good old tried sorts cultivated by my neighbours, I went in for everything with a new name; and the more foreign and uncommon the names were, the higher rose my hopes of producing something in the way of fruit which should dazzle my contemporaries, and make my name famous among the amateur gardeners of my day. I had twenty varieties of Apricots, a large number of Peaches, Nectarines, and Plums; half a dozen kind of Mulberries, and Figs in proportion, not forgetting Apples and Pears. I even tried my "prentice hand" at raising pyramidal trees of Gooseberries, and may mention, in passing, that the Londons, Crownbobs, and Thumpers in pots never grew any larger than Champagnes or Astons. I covered the roof of the orchard house with at least twenty different kinds of Grapes, having, among others, purchased a parcel of ten Vines newly imported from France and untried in this climate. These were all failures. Beauté de Bordeaux was a wretched black Grape, with a strong family likeness to the black Currant, and not much larger; Eau d'Or was a miserable green production, with a woolly pulp and without the slightest flavour, therefore quite uneatable; and the other kinds equally disgraced their high-sounding names. How glad I was to get rid of these impostors, grafting upon those stocks which appeared to be the most vigorous, the good old black Hamburgh and Frankenthal, with Buckland's Sweetwater and the Royal Muscadine.

On revient toujours
A ses premiers amours.

My Grapes are now excellent. All through September and October the ripe clusters hang fair and tempting, and come in as a valuable crop when the hothouse Grapes are done.

I was not long in discovering that it was impossible to succeed in growing Apricots and Cherries with the other stone fruits, and as Rivers's directions to give plenty of night air resulted in an unhealthy growth of the Peaches and Nectarines, we consigned the Apricots and Cherries to another house, where they could have unlimited air, and were not syringed. We never succeeded when we gave them the same treatment which answered very well with Peaches and Nectarines. We have suspended from the orchard-house rafters shelves supported by iron brackets in the shape of a T inverted, these are filled with Strawberries in pots, which have supplied us with a large, clean, and handsome crop of fruit. The treatment is very simple. The runners are taken as early as possible in the summer, and properly established in small pots, which are well drained and filled with a rich compost. The soil is beaten as firmly as possible into the pots, the plants are then placed out of doors in the autumn in a favourable situation, to complete their growth and ripen their crowns; they stand in a bed of ashes or similar material, to prevent the ingress of worms. When the orchard house is arranged for

the winter, the Strawberries are carefully cleared of dead leaves, and the earth is again pressed firmly down into the pots. They are then brought in and covered with dry litter; this prevents too great evaporation, and protects the plants not only from severe frosts but from the effects of the winter sun, thus giving them longer and more complete rest. In early spring the first batch are again cleaned, top-dressed, and placed upon the shelves to fruit. To secure the finest fruit, all the imperfect blossoms are taken from the plants, thus concentrating their strength upon the remaining berries; the fine and abundant crops we always have amply repay us for the extra trouble.

We have just finished (the last week of July) our first gathering of Mulberries and Figs, and a fine crop of Rivers' Early Prolific Plum. Many growers would banish this Plum from the orchard house, but the earliness and certainty of the crop surely entitle it to a place under glass. The orchardist should cultivate every variety of Gage. I have also found Pond's Seedling, Kirk's, and Washington remarkably fine; grown out of doors, they are considered only fit for the kitchen; under glass, their fine flavour renders them valuable dessert Plums. Jefferson and Golden Drop, with care, will hang almost any length of time upon the tree, and supply a delicious dessert when the other trees are bare and leafless. Peaches and Nectarines have always done well with us; Early York, Royal George, and Barrington still hold their own against all new comers. Hunt's Tawny, Pitmaston Orange, Elruge, and Bowden, among the Nectarines, produce a more satisfactory crop than the newer kinds of the Stanwick type. I may mention here that we have no artificial heat in our orchard house.

We grow a very small number of Apples, as we do not consider they sufficiently repay us for the time spent in their culture and the space they occupy; but Mela Carla, Melon Pippin, Cox's Orange, and a few others, which are too delicate to bear the cold without protection, form a fine addition to the collection. Fruit growers much neglect the cultivation of Pears under glass protection. How often does the gardener cherish fond hopes when he sees his carefully-trained pyramids and espaliers one mass of bloom?

To-day he puts forth
The tender leaves of hopes; to-morrow blossoms,
And bears his blushing honours thick upon him.
The third day comes a frost—a killing frost,—

and these bright visions are quickly dispelled. Should he be lucky enough to escape the frost, a cold and ungenial summer may render all his care and toil in vain, by giving him a Pear no better than a Turnip. This can never happen under glass; the wood is well ripened, the bloom abundant, and the fruit is perfection. Two years ago, I remember surprising an enthusiastic fruit-grower with a "Thompson" weighing 23 ounces; it was truly a melting Pear. For delicacy of flavour, Gansel's Bergamot and Seckle are almost unequalled. I have also specimens of Todtleben of equal size. All the best Pears are improved by being grown under glass.

An orchard house is easily managed; but, as the trees are generally numerous, the space limited, and the cultivation artificial, it requires great care and attention. Many are its enemies, and any neglect may soon render all one's labour in vain. The trees, if grown in pots, should be re-potted and dressed every autumn, early enough to enable them to perfect their growth before they are ready for their winter rest. Before the frost sets in they should be closely packed together, and the roots protected by neat coverings of litter; this, as in the case of the Strawberries, prevents evaporation and checks root action. I do not consider that the trees are in the least injured, but rather benefited by a few degrees of winter frost, if the roots are well covered. When they are set out in the spring, the blossoming should be retarded as long as possible to escape the early frosts, which (when they come when the bloom is out) destroy the chance of a crop. When the leaves first appear, the greatest caution should be exercised to prevent draughts, and the house should be closed on the windy side. The neglect of these precautions chills the plants, checks the flow of sap, and is the precursor of all the ills which trees are heir to—first, the green aphid, quickly followed, in the case of Peaches and Nectarines, by his brown relative, in the

case of Plums, blistered leaves, stoneless fruit, and miserable stunted growth; lastly, the back scale—all of which may be prevented by carefully preserving a healthy growth. Early closing of the house, with copious syringing, are necessary and remedial measures; but air should then be given early in the morning, before the sun has had time to drive back upon the plants the exhalations caused by the overnight treatment.

When our orchard house was first stocked, it was the despair of our old gardener, a man of other days, to whom it appeared in the light of a dangerous innovation. I well remember him—his name was Felix, a sad misnomer—as a singular infelicity attended most of his operations. He had a soul quite above red spider, black aphid, &c., and regarded the extirpation of these destroyers as a matter quite out of his province. We were more fortunate in the next gardener, as as I took a man who had been trained by an experienced orchardist—it is a mistake to employ any other.

In conclusion, I must not forget to say that something more is required before the fruit is ready for the table—care should be taken as to the mode of gathering. No fruit should be touched by the hand; it should be carefully cut from its stem before it is heated by the sun's rays in the morning; and before being brought to table it should be cooled down. The mode we adopt is to place it in a sieve, and let the sieve stand over a vessel filled with cold water in the fruit house. Fruit cooled in this way is much improved in flavour.

Notts.

DELTA.

MANY visitors to Dublin will remember the remarkably fine Pear tree planted against Sir Philip Crampton's house in Merriem Square (of which we publish a full account at p. 101), remarkable above all from its being planted in a deep area of a house in a city square, and in soil in which the roots must be cut off from the conditions which are usually considered indispensable for perfect Pear culture. With such an example before us, there can be little doubt that much of the vast extent of wall surface in our towns might not only be beautified by the foliage of climbers, &c., but also be made profitable, in a high degree, by the culture of fruit trees. It should be borne in mind that the temperature in large cities is usually about two degrees higher than that of the surrounding country, and that, in our latitudes, this is a great gain in the culture of choice fruits. Apart from this we may remark, as gardeners well know, that, by placing the trees 2 or 3 inches from the wall, an additional amount of heat is secured. Both these conditions of increased temperature are most favourable to the perfect ripening of the finer kinds of winter Pears. It is only necessary to consider, if an equally fine Pear tree were planted on each house on that side of Merriem Square, what an immense accession would be permanently made to the city in an increased supply of this choice fruit. In conclusion, leaving profit out of the question, and regarding fruit trees merely as ornamental subjects, we may say that, combining the beauty of their flowers in spring with that of their fruit in autumn, none of the so-called ornamental trees are equal to them in point of beauty alone.

THE Lavender fields at Hitchin are now in full bloom, and very beautiful they are in their changing shades of colour as swept over and moved about, meadow-like, in the breeze. Lavender, too, is grown at Mitcham by the hundred acres, and Pepper Mint occupies a still larger area; it is a three years' crop, and during the next fortnight will be harvested for purposes of distillation. Liquorice once formed a main crop in these fields, but although it is still grown in considerable quantities, it is not so extensively cultivated now as it formerly was, on account of its entirely occupying the ground for four years, and during that time requiring great attention in the way of cleaning, besides the ultimate cost of trenching out the roots, or rather underground stems. Several acres are devoted to Chamomile, the double-flowered sort being preferred, on account of the weight of the produce, which is picked several times during the summer months. Sage, likewise, forms an important crop, and pretty remunerative it is, for the stalks are cut over, bunched, and sent to market at once. The crop is frequently renewed, and Parsley is commonly grown between the rows. Of white Poppies there are also several acres, and these plants are now maturing their seed-heads. Acres of Squirting Cucumber may also now be seen in this neighbourhood, and the plants are very productive. The fruit is carefully gathered just as it begins to ripen, which it does gradually, so that the operation of gathering is repeatedly performed during the course of the year. These herbs, as a rule, are distilled by the growers on their respective establishments, and disposed of to the apothecaries in a raw yet semi-refined condition.

NOTES OF THE WEEK.

— THE Clematises at Messrs. Jackman's Nursery, Woking, are now in full bloom and will continue so for several weeks. C. Jackman and Lady Bovill are in themselves well worth a journey to Woking to see, and there are many others with blooms equally large and beautiful.

— ON the lawn at Burghley House, near Stamford, is a picturesque Lime tree, which was planted by Queen Elizabeth on the occasion of one of her visits to Lord Burleigh. Several of its larger limbs having been damaged by storms are now supported by props, and the tree, which is well covered with foliage, promises to weather the wintry blast for generations yet to come.

— VISITORS to Messrs. Veitch's nursery, at Coombe Wood, may now see some of the finest specimens of *Yucca gloriosa* in flower perhaps ever beheld in England. They form a perfect picture down the principal avenue of this extensive nursery, and present a *coup d'œil*, well backed up as they are by splendid examples of *Wellingtonias* and *Araucarias*, such as, perhaps, could not be elsewhere met with. The *Yuccas* form the centre of a series of beds of hardy Heaths and *Menziesias* surrounded by well-kept Ivy edgings.

— LIMES and sweet Chestnuts are now in full flower, and produce a striking effect in the landscape of the districts in which they occur. At Burghley Park, near Stamford, hundreds of these trees are now covered with their pale yellow blossoms, and are visited daily by large quantities of hive bees. When in flower such trees contrast forcibly with the dark green of the Elms with which they are associated, or with the more sombre hues of Conifers and Purple Beeches.

— THE *Pall Mall Gazette*, in commenting upon a recent conviction for selling decayed Cherries, draws attention to the scope and meaning of the words "unfit for human consumption," and expresses a hope that not only decayed fruit will be condemned by the sanitary inspectors, but that unripe fruit will meet with a similar fate. This is a most timely piece of advice, and one which we gladly second. The recklessness with which green fruits, especially Apples, are hawked about the London streets, should certainly receive a check.

— WE saw some Potatoes planted the other day which will produce quantities of nice young tubers fit to use next Christmas. One of the points in their culture is to keep them as dry as possible, otherwise they are apt to damp off during October and November. These Potatoes were planted on an ordinary south border, slightly elevated above the general level, so as to ensure dryness; and then, as soon as planted, ordinary garden frames are placed over them. This plan may be practised with advantage wherever very early young Potatoes are a desideratum.

— THE *Abeille Médicale* publishes what it terms "a simple and effectual cure for the sting of wasps, hornets, and bees," communicated to that journal by M. Dauverné. This is nothing more than lime-water, which can be made in almost every country-place, where it might not be possible easily to procure spirits of ammonia. So effectual is lime-water in cases of this kind, that M. Dauverné states that on one occasion, when he was attacked by wasps, and severely stung about the head, a single application of it gave him instant and permanent relief. Other trials which M. Dauverné made of it were attended with the same happy results.

— SEVERAL hardy climbing plants are just now in full flower, and are so very effective that one cannot resist wondering why they are not more generally planted and trained up the walls of cottage and villa residences than they are. Among those most conspicuous may be mentioned common Jasmines and Honeysuckles, *Eccremocarpus scaber*, *Bignonia capreolata*, Clematises of different sorts, and climbing Roses. The *Eccremocarpus* is easily propagated from seed, which, in sunny situations, it bears in abundance. It is one of the best deciduous wall plants we have, and will root into an old stone wall as freely as a Snapdragon or Wallflower.

— DR. TONER, of Washington, advocates the establishment of "free parks and camping-grounds, or sanitariums for the sick and debilitated children of the poor of crowded cities during the summer months." "Such parks," says Dr. Toner, "should be free to all who have sick or debilitated children, and persons while there should be permitted to live in tents or cottages, and in such style as their means and tastes justify, so long as they do not violate the laws of health or incommode their neighbours—the main purpose of the institution being to secure by a healthy rural residence the restoration to health and the preservation of the lives of the children of the poor, suffering from, or threatened by, diseases incident to, and aggravated by, the excessive heat of summer in cities." The plan seems worthy of serious consideration.

THE FLOWER GARDEN.

ORNAMENTAL GRASSES.

MANY of the larger kinds of Grasses are very effective planted out singly on the lawn, or grouped in masses in warm sheltered positions; while some of the smaller kinds, when grown in small pots, are equally useful for purposes of general decoration. Many of them, too, furnish elegant green sprays for cutting; and, when grouped along with choice flowers and Ferns, they have a light and graceful appearance, either in drawing-room vases or as subjects for table decoration. Most of the kinds may be readily obtained from seed, and, being hardy, are well adapted for cultivating in the sitting-room window. Some species, such as *Festuca glauca*, make good permanent border plants or edgings; while the fresh green *Isolepis gracilis*—which, strictly speaking, does not belong to the true Grasses—is grown by the thousand for purposes of indoor decoration. Grown in small pots, it is admirably adapted for fringing groups of larger plants, as it may be suspended, or used in the window as a bracket plant. It keeps beautifully fresh all the year round, if plentifully supplied with water at the root. Grass seeds may be sown in pots or boxes early in March, and, when sufficiently advanced, pricked off into 48-sized pots, using a fresh compost of fibrous loam, leaf-mould, and coarse sand. Some of the larger permanent or perennial kinds are readily propagated by division, and, if liberally treated, soon form noble ornaments in pleasure-grounds.

LARGE-GROWING HARDY GRASSES.

PAMPAS GRASS.—This is well known to be one of the most effective and beautiful of ornamental Grasses, often bearing its



Pampas Grass.

silvery plumes on stalks from 8 to 10 feet high. Some varieties have a rose-tinted inflorescence, and one handsome form has its slender leaves variegated with creamy-white. When planted in moist situations near the margins of lakes, ponds, or streams, it has a striking appearance; but in such situations it is greatly benefited by having its roots mulched during winter with rotten stable manure.

REEDS.—Nearly all the kinds of *Arundo* form conspicuous masses from 2 to 12 feet high. *A. Donax*, *A. Donax versicolor*, and *A. conspicua* are the best, and soon establish themselves in a moist warm soil, almost rivalling the Bamboos in portly grace and beauty.

ERIANTHUS RAVENNE.—This somewhat resembles the Pampas Grass in general habit, but is, if possible, more graceful. It

is a noble Grass, growing from 6 to 10 feet high, and, when bearing its elegant silvery plumes, forms a fine specimen. A variety of this, delicately tinted with pale violet, is useful for contrasting with the normal silvery form. Not quite hardy.

GAHNIA EBENOCARPA.—This is a fine plant, somewhat resembling the common Reed in habit, and attaining a height of about 10 feet in a warm moist soil. It belongs to the Sedge family, and bears elegantly-drooping plumes furnished with jet-black seeds. It is a rapidly-growing species, and deserves general cultivation as a marsh or water-side plant.

GYMNOTHRIX LATIFOLIA.—This strikingly effective plant forms handsome tufts of bright green leaves, and throws up stout



Gymnotherix latifolia.

cane-like stems, on the apices of which its nodding flower-plumes are produced. It should be carefully planted in well-manured fibrous loam in a warm sheltered situation, where it will soon form noble specimens, rivalling even the *Arundo Donax* itself in stately grandeur. Its roots should be heavily mulched with stable manure or half-rotten leaves during the winter months, or they may be taken up and stored in moist sand in any cellar or outhouse where the temperature is equable and frost is excluded.

HOLCHUS (SORGHUM) SACCHARATUS.—This fine hardy annual is very effective when massed in groups in the flower-garden. It is propagated from seed sown early in the year, and the plants should be set out in light well-manured soil in a warm and sheltered situation when all danger from frost is over. Its fresh green drooping foliage is produced on stout cane-like stems, which in autumn are terminated by plumes of dense brown graceful inflorescence.

SORGHUM (HOLCUS) BICOLOR.—This is one of the most elegant



Sorghum (Holcus) bicolor.

of all ornamental Grasses, having fresh green foliage and elegantly drooping panicles, as shown in our illustration.

IMPERATA SACCHARIFLORA.—A very ornamental species, having a Reed-like habit, and bearing elegant silvery panicles on the apex of slender stems, from 5 to 6 feet in height.

SETARIA JAPONICA.—This is a fine new Grass, of vigorous

habit and noble appearance. It is a half-hardy annual, and grows from 3 to 4 feet high, having a habit similar to that of Maize. The thick cylindrical spikes at the apices of the stems give the plants a very portly appearance; and, as they are rapid growers, they are well adapted for sheltered positions in the sub-tropical garden.

FEATHER GRASS (*Stipa pennata*).—This is well worth cultivating on account of its elegant silky plumes; it does well planted either on the lawn in isolated clumps, or when grouped along with herbaceous plants in the mixed border. *S. filiculmis* is also well adapted for decorative purposes, bearing a branched inflorescence densely covered with silk-like hairs. Both species are hardy perennials, and furnish graceful sprays for arranging along with cut flowers, or in collections of dried Grasses and immortelles.

MAIZE.—Several species of Maize or Indian Corn are striking objects in sub-tropical gardens when planted in richly manured soils and in warm sheltered situations. They are of vigorous habit, having thick cane-like stems, and broad drooping strap-shaped leaves. In height they vary from 2 to 12 feet, and when raised early and grown on well before they are planted out, they soon become strikingly effective in groups and masses.

ZEACZKO.—This is a robust species of Maize, attaining 10 or 12 feet in height, and remarkable for its strong growth and enormous wavy-margined foliage.

Z. JAPONICA.—Another strong-growing species, well adapted for outdoor decoration during summer. A variety of this plant has broad variegated or striped foliage, borne on stout stems from 3 to 5 feet high.

Z. GRACILIMA.—This is one of the smallest of the ornamental kinds of Maize, and very effective for groups, masses, or individual plants in shaded portions of the lawn. This species does not produce its panicles in Northern Europe, but its fresh green appearance throughout the whole season more than compensates for this seeming loss.

In addition to the above, there are two or three species of *Panicum*, such as *P. virgatum*, *P. sulcatum*, and *P. plicatum*, that form effective decorative plants for the conservatory, each having bright green Palm-like foliage.

DWARF GRASSES FOR POTS.

AGROSTIS PULCHELLA.—This is a beautiful dwarf species which rarely exceeds 9 inches in height; grown in pots it forms dense tufts, and its elegant panicles are very ornamental. It also does well in a window.

SMALL QUAKING GRASS (*Briza gracilis*).—When grown in pots this forms dense masses about a foot high, and its inflorescence is remarkably slender and trembles, like Aspen leaves; with every breath of air. The sprays of this and the following species are well adapted for cutting, and the plants themselves are effective when skilfully grouped with other plants.

LARGE QUAKING GRASS (*B. maxima*).—A fine species similar to the last in habit but much larger, being from a foot to 18 inches high. It grows well in the herbaceous border and is one of the most effective of ornamental Grasses.

ELEUSINE BARCINONENSIS.—This is a new and elegant species well adapted either for the herbaceous border, or for pot culture in the window. It is of graceful port, having a slender umbrella-like inflorescence, and grows about a foot or 15 inches in height.

LOVE GRASS (*Eragrostis elegans*).—This is a slender and graceful species having a finely cut inflorescence about a foot high.

SQUIRRELS-TAIL BARLEY (*Hordeum jubatum*).—This is a robust-growing species, about 18 inches high, bearing numerous purplish feathery plumes, which give it a very ornate appearance. It makes a nice tuft in the herbaceous or shrubby border.

ISOLEPIS GRACILIS.—For pot culture this is one of the most valuable of all Grass-like plants, as it is perennial and always looks fresh and healthy, even in a cool temperature. It is easily propagated by division, and is invaluable for window culture or for indoor decoration.

LAGURUS ORNATUS.—A beautiful species, growing from 15 to 18 inches high, of a fresh green colour, bearing a profusion of small white plumes.

LAMARCKIA AUREA.—This is a pretty and peculiarly dwarf species, seldom growing more than a foot high, and forming a dense tuft of bright foliage. It does well in a pot, and its inflorescence is very attractive.

Many other species of ornamental Grasses are effective when well grown, and form pretty ornaments, either for the drawing-room, conservatory, or herbaceous border, during the summer months. F. W. B.

Lychnis Bungeana.—I used to keep this indoors in winter and plant it out in summer. Last year however, one plant of it was unintentionally left out, and when observed in April it was beginning to grow, and now it is the best of all my plants and is flowering well; indeed, it has very considerably exceeded, both in strength and bulk, those nursed in my greenhouse during the winter, although last year it was one of the weakest of my plants. It grows to a height of from 16 to 20 inches, and produces heads of flowers containing about half a dozen pretty scarlet blooms in each head, each of the blooms being about 2 inches in diameter; the leaves, too, have a crimson tinge. If fully exposed to the mid-day sun I find that the colour of the flowers soon fades, but that, if grown in a partially shaded place, they retain their true colour for a considerable time. I may add that my garden is damp and on the London clay, and that on that account it is unfavourable to plant growth.—A. M. T.

Clematis Lady Bovill.—I have a plant of *Clematis Lady Bovill*, trained to a pole. The first year it bloomed well, but last year, and again now, the blooms have become dwindled down to the size of those of the old *Hendersoni*. Can you account for this? Another creeper is planted to the same pole; the roots, however, of each are trained outwards on different sides. I should add, that the soil is good, and the growth of the *Clematis* vigorous.—J. H. W. T., *Carlou*. [*Clematis Lady Bovill*, if properly grown (which it is not difficult to do), should bear flowers some 3½ inches in diameter, and should make a growth of 8 to 10 feet high if pruned back annually and dressed with old rotten manure about the end of February. Probably the other "creeper" planted to the same pole robs your *Clematis* of its nourishment during June and July, when it is developing its flower-buds. We would recommend you this winter to remove the other creeper, and to put some good soil and manure round the *Clematis*, when you will doubtless have next year as fine blooms as you can desire, and plenty of them.]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Trifolium uniflorum.—This is a dense-growing species, having purplish-green trilobed foliage and solitary bright rosy flowers on stalks an inch or two in height. It flowers very freely during summer, and is a rare and effective plant either for the herbaceous border or rock garden.—W.

Herbaceous Plants in Flower.—Among these may be mentioned *Linum viscum*, a fine kind which bears rosy-lilac flowers as large as a half-crown; *Michauxia campanuloides*, which bears large white flowers in panicles 2 to 3 feet in height; and the blue Daisy (*Bellis rotundifolia* var. *coerulea*). The last may now be found in flower at Kew planted out on the rock-work.—B.

Gentians.—Several of the Gentians at Kew are just now in great beauty. conspicuous among them are *G. gelida*, a kind which grows 6 or 8 inches in height and has closely arranged leaves in four rows, and terminal clusters of deep blue flowers; also *G. cruciata*, a sort which bears dark blue flowers; and *G. Saponaria*, a kind with lighter flowers.

Sedum aere elegans.—Wherever carpet-bedding is practised, this little gem must prove indispensable, and as a dwarf edging to flower-beds it cannot fail to be a favourite. In colour it is a soft golden-grey and much more persistent than that of the golden variegated form of *Sedum aere*. It is quite hardy, but until more plentiful it is perhaps best wintered in a frame, cool pit, or greenhouse, and transplanted out of doors in spring—about, say, in the last week of April.—M. MILNER.

Lychnis Bungeana miniata.—This grows from 9 inches to a foot in height, and produces heads of flowers consisting of three, four, and five blooms, each of an orange-scarlet, each bloom measuring from 2 inches to 2½ inches across. It is really a beautiful plant and it succeeds well in any good loamy soil that is not too stiff. Like herbaceous *Phloxes* it may be propagated by division when it commences to grow in spring, or by means of cuttings made of the young growths when they are about 3 or 4 inches high and before the flower buds are formed.—J. B.

Eccremocarpus scaber.—Plants of this highly ornamental hardy climber are now flowering freely in the sub-tropical garden at Battersea Park. It produces fresh green pinnate foliage and clusters of bright orange tubular flowers, something like those of a small flowered *Bignonia*. It appears to be hardy in sheltered situations south of the Trent, and wherever it succeeds is very effective. Last summer I saw the end of a thatched cottage near Killerton, in Devon, completely covered with this plant, and it is frequently met with in London gardens. It is a native of Chili, and nearly allied to the *Bignonias*.—B.

Iron v. Terra-Cotta Vases.—Judging from one of the latter which has been standing in my garden for the last fifteen years, where it has been in constant use as a receptacle for flowers in summer, and sometimes for *Crocuses* in the winter, I can endorse Mr. James Pulham's statement in favour of terra-cotta for garden vases. Mine, with the exception of a few slight abrasions made by the lawn-mower or by a passing wheelbarrow, seems as sound now as it was when I first received it. It was not then new, but I believe it was made at the terra-cotta works at Stamford.—B. S.

THE INDOOR GARDEN.

AERIDES CRISPUM.

THIS is an erect-growing species, rather stiff in its habit, but making a fine specimen plant when well grown. It has purplish stems and rigid dark-green foliage; and, when healthy, it throws out stout aerial roots the thickness of the little finger. It grows well in an intermediate house, or even in an ordinary plant stove, potted in lumps of fibrous peat and living Sphagnum Moss, the pot being three parts full of crocks and lumps of charcoal. It flowers freely in June and July, bearing long branched spikes of delicate white flowers shaded with lilac, the lips being blotched with purple. The segments of the flower are very wax-like, and the plant when in bloom perfumes the house in which it is growing with its delightful fragrance.



Aerides crispum.

Small plants may be planted in baskets and suspended near to the light, and this treatment often induces them to flower earlier than they otherwise would do if down on the stage below, and partially shaded by other larger plants. This species, like most other Orchids, is very variable; two of its varieties being well marked and distinct. Native of India, from whence it was introduced into our collections about 1840.

A. CRISPUM LINDLEYANUM.—This plant is more robust than the normal species, having leaves longer and fully half as wide again, besides being of a darker colour. The flowers are also slightly deeper in colour than those of *A. crispum* proper. Native of Coonoors.

A. CRISPUM WARNERII.—This variety is as easily distinguished from *A. crispum* by its much narrower leaves, as "*Lindleyanum*" is by its broader ones. It is a free-flowering

variety, its white or pale flesh-coloured sepals and petals being faintly dotted with pale rose, while the lip is of a deep rosy-purple tint, verging on crimson.

A. CRISPUM and its varieties, together with *A. maculosum*, and its rare and magnificent variety *A. Schröderii* (only one plant of which has ever been imported), belong to a distinct section of the genus, and the new *A. crassifolium*, described in our columns a few weeks ago, may be considered as the finest of the group.

F.

TROPÆOLUM TRICOLOR GRANDIFLORUM.

As an indoor winter and spring-blooming plant, this *Tropæolum* is grown in most gardens, but I never yet saw a good specimen of it since I came to England. We commonly find it grown in 6 or 8-inch pots with a few sprayey branches stuck therein for the plants to climb on, or with some puny wire trellis affixed to the pot for the support of the shoots. The finest specimens I have anywhere seen are those annually grown in Dalvey Gardens, Forres, where their management is simple and easy, and the result most satisfactory. The following is the mode of culture practised in that well-managed establishment. After the plants have done blooming in April (though some of them may extend into May), they are placed out of doors against a north wall, the pots resting on pieces of slate. Here they are permitted to remain until September, without any care further than a little water being given to them now and again until the "straw" is completely dead. As soon as this is the case the decayed shoots are removed, the trellises cleaned, mended, and stored away in a shed, and all permitted to remain in that position throughout the rest of the summer, the pots containing the roots having water when it rains, and being without it when the weather is dry. Early in September a compost is prepared for them, consisting of one part yellow loam, one part decayed turf, and one part decayed manure and leaf-soil, together with a good admixture of rough river sand, and sometimes a little peat. The roots are then shaken out of their pots, and care is taken to separate those of *T. Jarrattii* from the sort in question, both being grown together, and all the roots, according to size and sort, should be laid carefully together. Clean pots are selected, varying in size from 8 to 10 inches in diameter; they are then well drained with washed crocks, over which a layer of Sphagnum is placed, then the roughest of the soil is filled in to within about 2 inches of the rim of the pot, making it pretty firm—just as in ordinary potting. The roots are then introduced, placing a few of *T. Jarrattii* nearest the edge of the pot, then goodly-sized roots of the other sort (according to the quantity at command and the number of pots to be filled), are arranged inside those of *T. Jarrattii*, the largest one being placed in the centre. The pots are then filled with the finer portion of the soil (which should not be sifted), and placed again on flags or slates to prevent the entrance of worms. The corms are usually about the size of small Potatoes, but I have seen some of them in Dalvey attain as much as 2 inches in diameter by 3 inches in length. The very large ones, however, are not considered so eligible as those of a medium-size, while at Dalvey the very small ones are either potted separately for the purpose of increasing in bulk or are given away to friends and neighbours. From each specimen there is a fair yield of extra corms annually.

The trellises are made of light wooden rods about 3½ feet high, of which there are from five to seven in each trellis. These rods are attached to each other by copper wire or string run around them, so as to form tiers, about ¾ of an inch apart near the base, and an inch towards the top; they are held preserved in their trellis-form by bands of strong wire about 9 inches asunder. Some of them are formed to fix inside of the pots by means of the ends of the rods being pointed and inserted in the soil; others are affixed to the outside of the pots, by tying the ends of the stakes pretty firmly in their position with strong wire. The most accommodating and lightest in appearance of the trellises are some that have slender circular iron rods instead of wooden ones; these rods are bent near the base, so that the ends may penetrate the soil while the curve permits the trellis to rest on the rim of

the pot. Should these trellises be too small, as they generally are, to accommodate the great mass of shoots and flowers the plants produce, an additional one, in the form of a balloon made of peeled Willows, and encircled in the same manner as the first ones with string or fine wire, is attached. The trellises are affixed when the plants are potted, for if delayed later, root action having begun, some injury might be done to them in inserting the ends. No water is given when the roots are potted for a day or two, when as much is given as will just moisten the whole of the soil, which afterwards is merely kept moderately moist. Shoots soon begin to appear, but not in great abundance until October and November, when they are transferred from their outdoor quarters to a Vinery at rest, where they will have good ventilation, plenty of light, and a temperature not under 38° or 40° at any time during the winter. As they advance in growth, even in their youngest stage, the greatest point to be observed is to train the shoots around the lower strings and keep them down for a long time. It will be observed in growing this *Tropæolum*, that the first 4 or 6 feet of stalk that the shoots make, no matter how pretty their leaves may appear at the time, they are good for nothing in the way of securing future beauty, for they soon lose all these leaves and leave their own ends and those of their laterals the sole supporters of the subsequently formed mass of fine foliage and flowers which are so attractive in this plant. Hence it will be evident that it is unnecessary to allow these stems to run completely over the trellises at first and then bend them downwards; better far to keep them down when they are down, twining them at first round and round the trellis until the shoots begin to flower, when they should be very little above half-way up the trellises. This is decidedly against theoretical notions, but undisputed practice has proved it to be the better plan. Training being attended to three times a week, the plants are easily kept in order, and there is no danger of breaking the young points, which are extremely brittle. The shoots of *T. Jarrattii* are more slender and slower growers than those of *T. tricolor*, and are therefore suited for, and employed to, train around the base of the specimens and over the bare stems of the latter, which they clothe most delicately and effectively. After steady growth has well set in, manure-water should be given to the plants pretty frequently until they begin to expand their flowers. This should be weak, otherwise a too gross growth would be encouraged at the expense of the blooms; but at no time is the soil permitted to become dry whilst the plants are growing. In this manner, by the middle of January, fine plants are produced, but it is not until the middle or end of February that they are at their best, and they continue in excellent condition throughout the month of March and into April. When they are approaching their best, they are shifted from the Vinery to a half-span house or conservatory, where their effective beauty, in front of a great mass of Camellias, Rhododendrons, Acacias, Azaleas, &c., may be more easily imagined than described. As soon as they begin to assume a withered appearance, they are turned outside as before described. They bear abundance of seed, which ripens very well after the plants are put out, and if sown soon after being gathered, or in the following spring, young plants are readily obtained. These seedlings do not flower much until they are two years old, but by that time they will have formed fair-sized roots. JAMES MORISON.

HERBACEOUS BEGONIAS.

INSTEAD of our having brought these to perfection, it would seem that we have scarcely crossed the threshold in that direction, notwithstanding the hybridising and selection to which this class of plants has been subjected for several years past. Both our principal English and continental growers have hundreds of seedlings from hybridised parents, and some of them even thousands. Amongst these are, as a matter of course, both superior and inferior sorts, and as soon as they have bloomed the former are retained and the latter are discarded. Size of flowers and brilliance of colour are important points now pretty well secured. The great desideratum at present, therefore, is, along with these, to have dwarf and stocky plants. Another consideration, too, is

having the pretty variegation of some of the old species, such as *B. Pearcei*, transferred to these hybrids, and even the flowers of some of the kinds have been induced to become double, as is the case with one which we lately saw at the Wellington Nurseries, St. John's Wood. The blooms of this were of a blush or pink colour, of good size and form, and of a close and decidedly double character. Besides this, at the nurseries in question, there are over a thousand plants of single-flowered hybrids at present in bloom, the flowers varying from those of the *Fuchsia* form to those of the round shape, and the colour from nearly white to a deep violet-crimson. Amongst the best of such as have been named are *Mrs. Harry Taylor*, a kind having fine round well-formed flowers of a bright orange-scarlet, and compact habit; *Dr. Masters*, carmine-crimson; *Mrs. Masters*, rose; *Rosea alba*, *Rubra superba*, &c. In Mr. Bull's nursery at Chelsea are also immense quantities of prettily-bloomed varieties of the *Begonias*, conspicuous amongst which are *Glitter*, vivid orange; *Caroline*, a kind with large pinkish flowers; *Climax*, bright carmine; and *Brilliant*, a bright crimson-orange.

The accommodating and highly decorative properties belonging to this class of plants must render them, when better known, especial favourites with the public, for they are easily grown and require but little trouble. On the approach of winter, when they show signs of decay, they should be gradually dried off, when they may be stored under stages where no drip or water can reach them until spring. In March, the contents of the pots should be carefully turned out, the roots selected according to size, and potted in clean pots and fresh compost. The pots should then be placed in a greenhouse or intermediate pit until growth commences, when the plants should be kept moderately cool and near the glass. If not potted at first into their flowering-pots, they may be shifted according as they require increased room, and treated like *Balsams* or *Cockscombs*; indeed, a rich compost like that used for *Balsams* suits them perfectly. A stake or two may be necessary in the event of the plants becoming of a "lanky" or straggling habit; but care should be taken not to encumber or render them unsightly by the presence of too many supports. Whilst growing they require abundance of water; and whilst in bloom a very thin shading from strong sunshine, so as to preserve intact the colour and beauty of the flowers.

W.

CYRTODEIRA CHONTALENSIS.

THIS charming little stove plant is as yet seldom met with in collections; but when better known it cannot fail to be a favourite. It was originally found growing on a little spot, in a shady grove, on the bank of a small stream, at the Pivon end of the Javali Mine, in the Chontales gold region of Central America, by the late Dr. Seemann. Out of considerably more than sixty plants of it at first packed for transportation to England, only six reached their destination alive, owing to misfortunes before and after embarkation, and but one of that half dozen was in really good health on its arrival at Mr. Bull's nursery, Chelsea. It is a Gesneraceous plant, of a somewhat creeping character, and forms a fine companion to such plants as *Sonorilla margaritacea*, the creeping *Bertolonias*, &c. The undersides of the leaves are of a purplish hue, the upper surface being hairy, and of an olive-green colour, with a blotch of glistening silvery-green suffused along the middle. The flowers are of a uniform lavender colour, large, of a true Gesneraceous form, and most freely produced from the middle of autumn until Christmas. When seen by gaslight, the leaves of this pretty little plant have a brilliant metallic lustre, which will render it suitable for house decoration. As may be inferred from its native habitat, it loves a moist and shady corner of the stove, and a uniform temperature. It may be grown in flat pans, or in little suspended baskets, and delights in an open compost consisting of decayed leaf-mould, peat, loam, and a good sprinkling of silver sand. The offsets, or rather runners, which it invariably produces, if pegged into the soil soon take root when they may be separated and treated as individual plants. A bell-glass, with which to cover the young plants, will be found of great service if the house is not naturally close and moist.

MARANTA MAKOYANA.

This is a welcome addition to an already popular genus of stove perennials, on account of its beautifully spotted and delicately pencilled foliage. Our illustration, for which we are indebted to Mr. Bull, gives an excellent idea of the peculiarities possessed by this novelty. Its leaves are borne on reddish-purple petioles, and are from 6 to 7 inches long, by about two-thirds that width. The ground colour of the leaf is semi-translucent, and of a pale greenish straw colour, while the symmetrically arranged oblong markings are of a very dark olive tint; or, perhaps, what is popularly termed bottle-green will better explain our meaning. Dark green veins spring from the midrib, and diverge gracefully on each side to the margin, and, between these, very fine dark green lines are closely arranged at right angles, reminding one very forcibly of those to be observed in the semi-pellucid leaves of *Aponogeton distachyon*. The under-surface of its leaves is of a port-wine colour, that colour being deepest beneath the dark blotches above. It is much smaller in all its proportions than *M. Veitchii* or *M. Lindeni*, which it somewhat resembles in general appearance. It is a robust grower when liberally dealt with, and, like its congeners, succeeds well in a compost of equal parts of turfy loam and peat, to which a little leaf-mould and coarse sand have been added. F. W. B.



Maranta Makoyana.

THE STOVE AQUARIUM.

STOVE aquaria are always interesting, and, when properly constructed and furnished, far surpass, in that respect, ordinary plant stoves. The chief objection to the erection of an aquatic house is generally the expense, as those who build plant houses like to furnish them properly; and the impression is, that aquatic houses can only be used for aquatics, and of these only a limited number can be grown, in consequence of the space they occupy. This is, however, a mistake, as such a house may be a general plant stove and aquarium.

There are few stove plants that refuse to grow well in the aquatic house for the greater portion of the year, and many will positively luxuriate in such a situation. To accommodate the Royal Water Lily (*Victoria Regia*), which should certainly occupy the place of honour, the house would require to be 40 or 50 feet square. This would allow a roomy circular tank to be placed in the centre of the house, with a good wide path all round, and the angles of the house would afford a considerable amount of room for shelving on which to place plants in pots. A flat ridge-and-furrow roof is the best for an aquatic house, as it admits the greatest amount of light, and distributes it evenly—an important point, as aquatics like plenty of

light and sunshine—and the *Victoria* has been found to thrive and expand its leaves best in houses so constructed. From 15 feet to 18 feet to the apex of the ridges is a good height, and the ridges should run east and west, in order that the tank may receive the sun's rays directly during the greater portion of the day. The tank should stand about 3½ feet above the floor line, and 15 inches depth of water will be sufficient for general purposes; but a trough 6 feet wide and 3 feet deep should be provided in the centre of the tank for the accommodation of the *Victoria*. No drainage will of course be needed, and the trough must be filled up with soil to the level of the tank bottom, previous to filling it with water; any other aquatics which may be grown should be kept in pots. The sides and bottom of the tank, including the *Victoria* trough, must be lined with one good coat of cement well laid on, and made watertight; two coats of cement are

less serviceable than one coat, as the second invariably cakes off. The house should be amply heated by means of coils of pipes taken round the side of the house under the plant shelves, or under the paths and covered with iron grating. The water in the tank may be heated effectively and quickly by pipes laid in the tank. Means must also be taken to afford bottom heat to the *Victoria* by taking a separate coil under and around the bottom of the trough in which it grows, with a stop-valve to it in order to regulate the temperature at pleasure. I should state that three sides at least of the house should be glazed down to the line of the shelving; the north side may be a wall upon which to train climbers, and to afford a background to the water. The tank should be supplied with soft

water—river water if possible—and if the supply is ample enough to afford a constant run into the tank, so much the better; if not, it must be at least partially changed every day.

The royal Water Lily is an herbaceous aquatic, but in this country, under artificial culture, it is found to succeed best when treated as an annual. Where the aquarium is dried off in winter, it will be necessary to procure a young plant of it every year from some other place. The young seedlings are generally large enough for transplanting by the 1st of April, by which time the leaves are about the size of the palm of the hand. As the plant gets stronger, the leaves are thrown up upon stout stems, just appearing at first above the surface of the water like a hirsute bundle. Gradually they unroll themselves, assuming a perfectly circular form, until they attain a diameter perhaps of from 6 to 8 feet, the completion of their growth being indicated by their unfolding themselves entirely and lying flat upon the water. The plant does not flower until it has made considerable growth, and, according to my experience, it will not flower unless the roots have a temperature about the same as that of the water in the tank. The flowers, in beauty and size, are in keeping with the foliage, and emit a powerful and agreeable scent. They last for a brief period only, but follow one another in close succession. The best soil for it is a half-and-half good strong loam and rotten leaf-mould, which becomes, after a while, an oozy mud in the water, and is probably as near an approach to the soil it flourishes in in the Amazon as can be employed. In planting, see that the crown of the plant is above the soil, and that the young leaves reach the surface of the water. After planting, the only attention needed is to see that the water and soil are kept at a temperature of 85°, or between that and 90°. While the Victoria is growing, the tank may be thinly furnished with plants set upon inverted pots, with the bottoms just level with the surface of the water, except in the case of aquatics in pots, which should be immersed. Such plants as the Sugar Cane, *Arundo*, *Cyperus*, *Papyrus*, Japanese Maize, and the drooping *Croton angustifolium*, distributed over the tank in this way, are very ornamental and effective, and they can be moved about or away, as required, to make room for the Victoria leaves as they extend. Flat-growing aquatics, such as the *Nymphæas*—a numerous and highly ornamental class—should occupy the spare spaces near the edge of the tank. In addition to the above, I may mention the *Nelumbium* or Water Bean, the *Limncharis*, *Sagittaria*, and *Pontederia*. These will be almost variety enough for an aquarium of moderate size. In a semicircular house, when the tank abuts against a wall at the back, a very effective background may be formed by grouping thickly against the wall such plants as *Crotons*, *Ficus elastica*, *Palms*, *Cyanophyllums*, *Dracenas*, *Caladiums*, *Cannas*, *Eucharis amazonica*, *Begonias*, *Ferns*, *Lycopods*, &c., keeping the tall plants at the back, and finishing off with the *Lycopods* and smaller plants at the water's edge. For the sake of the plants in pots, shading will be necessary in bright weather; but it should be dispensed with in the mornings and afternoons. Ventilation, too, on a liberal scale, will be required both day and night, to allow the steam to escape which is continually ascending from water heated with pipes; otherwise it gets condensed upon the foliage of the plants, keeping them always wet.

Another way of constructing a Victoria tank is to make it about 3 feet deep, and lay a mound of soil in the centre for planting the Lily upon. When done in this way, no extra piping is required to heat the soil, as the heated body of water which surrounds the heap does that effectually enough. The only objections to this plan are that the soil is apt to get washed away if the water is disturbed, and smaller-growing aquatics cannot be grown so conveniently, nor can plants be arranged in the tank so easily as when the water is only about 15 inches deep; besides, a shallow tank can be used as a plant stage in winter, if using it as an aquarium in summer only is desirable. The tank may also be made in the shape of a basin, and heated with pipes, entering at or about the lowest point, and ascending in coils towards the edge of the tank. J. S.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Maiden-hair Fern. Will you kindly say whether the Maiden-hair Fern (*Adiantum Capillus-Veneris*) is quite hardy, and what is the best way to cultivate it, in order to have plenty of the fronds to cut for vases, &c. ? F. H. (The Maiden-hair Fern will live out of doors in sheltered and warm situations, but in cold localities it succeeds best under glass. We would recommend you to plant it under the shelves or benches, or on the walls of the conservatory or greenhouse, where it will save itself freely and grow abundantly.)

Orchis foliosa.—I see you have recorded in THE GARDEN that *Orchis foliosa* has been shown in fine condition this year. I think I might challenge comparison with two pots of it, which I have had in bloom for nearly a month past, the one containing twenty spikes of bloom, the other nineteen, all in the greatest luxuriance. From pot to tip the flower spikes measure about 2 feet 3 inches, and the circumference of the plants is respectively 5 feet, and 5 feet 6 inches. *Saxifraga Cayleyana* var. *Nepalensis*, and *S. coccinea*, have also been splendid with me of late.—J. ATKINS, *Pennock*.

THE FRUIT GARDEN.

GRAPES WORTH GROWING.

JUDGING from the numerous inquiries which one receives on this subject from those about to plant Vines, or graft old ones with better varieties, I imagine that a summary of Grapes that are really good, with a few hints upon their comparative value and general characteristics will not be unacceptable. Lists of Grapes there are in every trade circular; but the brief and very general descriptions given in such lists are of little use to many who grow Grapes, and who have but little personal knowledge of their different varieties. I purpose, therefore, to name the sorts only of known excellence, and such as I am personally well acquainted with, and to furnish lists of the best kinds to plant, for large or small collections. It will be sufficient for our purpose to divide the different classes into black, white, and red or grizzly, and I shall commence with

BLACK GRAPES.

BLACK HAMBURGH.—This is too well-known to need much description. It is the best variety for general purposes that can be grown. It is a vigorous grower, a free bearer, and bears forcing better than almost any other. It can be brought round to ripen its fruit perfectly at the new year, and when the fruit is well matured in September or October it will keep till February. When produced in good condition, the bunches are large, well shouldered, berries running about 1 inch in diameter, of a deep black colour, and covered with a fine bloom; flesh firm, and flavour excellent—never cloying the appetite. The fruit differs widely in appearance under different circumstances and management, which has given rise to many synonyms; but of all the varieties of the Black Hamburgh the common kind may be said to be the best. This Vine is one of the best stocks for grafting kindred sorts upon.

MUSCAT HAMBURGH.—This variety, when in good condition, is unsurpassed among black Grapes; but unfortunately a great proportion of the berries are often stoneless, which so mars its appearance that it has been discarded by many growers. It is an early Grape, coming in just after the Black Hamburgh. The bunches are large and symmetrical; berries large, oval, black; flesh firm, with a most delicious Muscat flavour. It succeeds well in some situations, both bunches and berries attaining a large size and finishing beautifully. When it does behave well it is sure to retain its place wherever grown. This Vine is a strong grower and a free fruiter.

WEST'S ST. PETER'S.—This is a second early Grape, and keeps well after it is ripe. Bunches and berries rather less in size than the Black Hamburgh, black, thin-skinned, with a rich and agreeable flavour. When well finished, the berries have a beautiful metallic lustre about them which is striking. It is a good grower and a free bearer, but does not stand very early forcing long.

BLACK FRONTIGNAN.—A very useful Grape; bunches and berries of moderate size; black, with a fine Muscat flavour. It is early, and a good forcer.

BLACK PRINCE.—This was a more popular Grape at one time than it is now. Still it is a good variety, and well worthy of a place. The bunches are long and tapering; berries oval, middle-sized, black, with a dense bloom, seldom refusing to colour well even in the worst seasons; flavour good, but inferior to the Black Hamburgh. This Vine is hardy, early, and a good bearer.

BARBAROSSA.—This is an excellent Grape when started early and ripened under a high temperature. It does well in a Muscat of Alexandria house, and unless it receives the same treatment the fruit is insipid and far inferior to a Black Hamburgh, which it resembles closely when ripened. The bunches are very large and loose; berries round, large, and black. It is a strong grower, but a somewhat shy bearer.

BLACK ALICANTE.—This is a Grape which has come into favour of late years owing to its fine appearance and first-rate keeping qualities. It is a vigorous-growing variety, and a great bearer; bunches large, and broadly shouldered; berries large, black, covered with a thick bloom, skin tough, flavour good when fully ripe. It is essentially a late Grape, and not a

desirable variety to grow for any other purpose, as it is far inferior to the Black Hamburg and other early sorts for dessert. It ripens its fruit well in the same temperature as the Black Hamburg, but it takes a longer period to ripen. When the fruit has to hang long the bunches should be well thinned.

LADY DOWNE'S SEEDLING.—This is a companion Grape to the above, and valuable solely on account of its keeping qualities, for which it is unsurpassed. The bunches are long and cylindrical, berries black, large, coarsely flavoured, but improving a little after hanging upon the Vine for a while. Hitherto the best keeping Grape grown.

GROS COLMAN.—A Grape of fine appearance, of tolerable flavour, and a good keeper.

MADRESFIELD COURT.—This is a new Grape, about the merits of which there is some difference of opinion. The Vine is a free grower and bearer; bunches long, tapering, and handsome, not shouldering much, but sometimes coming double—i.e., with the limbs of equal size; berries above medium size, oval, black, with a rich Muscat flavour. Sometimes a few of the berries crack when about ripe, and it is not always a sure colourer; but otherwise it is an excellent Grape, and early.

RED GRAPES.

GRIZZLY FRONTIGNAN.—This is the only red Grape worth mentioning. It is a moderately strong grower, and a pretty free bearer; bunches middle-sized, rather tapering, sometimes cylindrical; berries round, and, when well grown, only less in size than the Black Hamburg; red or grizzly, but not always quite true to its character in this respect; with a peculiarly rich and agreeable Muscat flavour, for which reason it is preferred by some to all other Grapes. It is earlier than the Black Hamburg, and should be in every collection.

WHITE GRAPES.

In this section I include yellow Grapes as well.

MUSCAT OF ALEXANDRIA.—This is among white Grapes what the Black Hamburg is among the black—the most extensively grown. It is a strong grower and a great bearer; the bunches are sometimes long, loose, and tapering, sometimes broadly-shouldered, squat, and very compact; berries very large, oval, and, when well ripened, of a deep amber colour; flesh solid, with a high and rich flavour. It is an invaluable Grape, and for a general crop has no equal. It requires a temperature at least 5° higher than the Black Hamburg, and a longer season of growth to bring it to perfection.

BOWOOD MUSCAT.—A variety said to be a cross between the Cannon Hall Muscat and the above. When it first came out I was confident that we had got a new and decidedly improved variety of the Muscat of Alexandria, and could at any time have picked the Vine from among others by its fruit, its foliage, or its wood; but, in some well-authenticated instances, it seems to have gone back to, or become so like its progenitor, the Muscat of Alexandria, as not to be distinguished from it—in the berry, at least. The most noble examples of the Muscat I ever saw were of this variety, and I mention it here, as it is still sold under that name, and, if it can be got true, it is a safe variety to plant.

BUCKLAND'S SWEETWATER.—A useful early Grape, ripening well along with the Black Hamburg, and taking on a fine transparent amber colour; berries large, round, or a little oblong; flavour sweet and refreshing. A very good Grape to grow along with the Black Hamburg, when both white and black Grapes are wanted early.

GOLDEN CHAMPION.—I mention this Grape as one deserving of further trial. But for the constitutional spot which affects the berries in some situations, it is undoubtedly one of the finest-looking white Grapes in cultivation, and one of the most deliciously flavoured. It is a vigorous grower, bunches large; berries very large, oval, and, when fully ripe, of a pale amber colour. It is a Grape that requires to be grown leisurely, plenty of time to ripen, and a dry atmosphere. When treated in this way I have always found it to finish very fairly indeed. It seems to improve in constitution when grafted on the Black Hamburg.

ROYAL MUSCADINE.—A very useful early white Grape; bunches middle size; berries the same, round, thin-skinned, sweet, sugary, and rich. A very desirable early Grape.

RAISIN DE CALABRE.—This is a late white Grape, requiring

the same treatment as the Muscat of Alexandria to finish it well. It is one of the strongest growing kinds, and a good bearer. Bunches very large and well shouldered; berries middle-sized, roundish, amber-coloured when ripened like those of the Muscat of Alexandria; flavour sweet and agreeable.

CHASSELAS MUSQUÉ.—A favourite early Grape. Bunches and berries moderate-sized; flavour first-class. The berries are, however, very apt to crack when about ripe, unless it receives special treatment. A dry atmosphere, and not too much moisture at the root, will lessen this evil. It is a free bearer, and a very serviceable early Grape.

WHITE FRONTIGNAN.—This Grape, except in colour, is in most respects, like the Grizzly Frontignan. It is hardy and a good early variety.

In addition to the above selection, I may name The Duke and the Waltham Cross Grapes, two white Grapes, at present being introduced to the public, and which are likely to be decided acquisitions; but in the meantime they can only be recommended for trial.

I now come to speak of the selections for planting Vineries, according to their extent and the demand for the fruit.

SELECTION FOR ONE VINERY.

Where there is only one Vinery, and it is desired to have ripe Grapes from it for as long a period as possible, plant the following varieties and in the following proportion:—Four Black Hamburgs, two Royal Muscadine, two Grizzly Frontignan, one Golden Champion, one Raisin de Calabre, two Black Alicantes, and two Lady Downe's.

FOR TWO VINERIES.

In the earliest division, plant six Black Hamburg, three Royal Muscadine, two Grizzly Frontignan, two Golden Champion, two West's St. Peter's, and one Black Prince. In the latest division, plant six Muscats of Alexandria, one Raisin de Calabre, three Black Alicantes, two Lady Downe's, one Madresfield Court, and one West's St. Peter's. Two Vineries planted in this way will give Grapes for the greater part of the year; but where the demand is large, and an unfailing and constant supply is expected all the year round, five divisions will be required. The first or earliest should be planted as follows: Six Black Hamburg, two Chasselas Musqué, two Royal Muscadine, two Black Frontignan, and two Buckland's Sweetwater. These may be planted in the second division also, and a plant or two of Golden Champion and Madresfield Court besides. If we were disposed to alter the above proportions, it would be to introduce more Black Hamburgs and reduce the others. The first and second divisions will carry the supply on till autumn, or later, and from that time, two divisions, one planted with Black Hamburgs, and the other with Muscats of Alexandria, will be found to answer best, and give satisfaction. After this, the late Vinery, planted entirely with Black Alicantes, Lady Downe's, a few of Raisin de Calabre, and West's St. Peter's, will come in and carry the supply on till the early crop is ripe the following year.—*Field.*

EARLY RIVERS PEACH.

This is a very early Peach, the earliest with which I am acquainted, and one that should be better known and more largely grown than it is by people who do not force Peaches. We are now, July 21st, gathering ripe fruit from a tree in the open border of an orchard house, to which no artificial heating whatever has been applied; and, moreover, in consequence of this house containing our very latest varieties, I have retarded it as much as possible; still, in spite of that, the Early Rivers is ripe when Early Grosse Mignonne, and some dozen more varieties are barely stoned. Another orchard house which has been forwarded to succeed a second early grand Peach house, does not contain any variety nearly so forward as the Early Rivers in this cool house. This Peach is somewhat after the style of the old Early Anne, and, like it, is inclined to be mealy, but perhaps juicier and larger, and, like it too, it is a sure and abundant cropper. For a number of years in succession we have fruited the Early Anne without failure on

the open wall, the fruit being ripe in the end of July or early in August. Early York proves the earliest Peach we have in the earliest house, but I am satisfied that the Early Rivers would yield ripe fruit in the same house a fortnight before that variety.

W. DICK.

Conford, 22nd July.

RUST ON GRAPES.

VARIOUS causes have been assigned for what is termed rust on Grapes; but I think I can produce satisfactory evidence that it is caused by exposing the fruit to cold draughts. In a Vinery here, we have a small window in the back wall, opening into a loft, and frequently in the early part of last season, instead of letting down the top lights to admit air, I opened the window, and before the berries were as large as Peas, I had ocular demonstration that this scourge had got possession of them, and that to such an extent that a number of bunches immediately opposite the window were rendered quite useless. It did not appear in any other part of the house. Judging from this circumstance, I am persuaded that to admit air by means of flaps in the back wall is not a method to be recommended, especially in the early part of the season; and if they should happen to be some little distance from the top of the wall, the evil will be considerably aggravated. The air admitted by such means rushes in with considerable force, and that too, from the north, in a horizontal direction, and comes at once in immediate contact with the bunches. Now, it must be obvious that this sudden change from heat to cold is sufficient to check the expanding power of the skin of the berry; the juice under such conditions oozes out, and thus forms little incrustations to which the name of rust has been applied. It is also quite plain that the air admitted by letting down the top lights will not produce a like effect, not only from its being more rarified by the protection of a greater or less height of wall above the glass; but it will also fall directly down on to the floor close to the wall, and will not come in contact with the fruit, but rather drive up the heated air, and it in its turn becomes warm. Some may say, "I have got no flaps in the back walls of my Vineries, and still my Grapes are rusted;" but I dare say many can bear testimony that it is no uncommon thing to see openings in the lapping of the glass from two to three-eighths of an inch wide: now these openings must cause considerable currents of cold air, especially when a cold wind sets in on the front of the house, and these currents are admitted too at the place likely to commit the evils complained of. In confirmation of this, I might add, that two years ago I had all the open laps of my glass puttied, and since then, with the exception I have just stated, I have not seen any appearance of rust; but, previous to that, I did have occasionally rusty Grapes. As soon as we can avail ourselves of the great improvements that have lately taken place as regards glazing, and can dispense with so many laps, rust will rank among the lesser evils incidental to Grape culture.

W. C.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

American Blackberries—Of the older Blackberries, the Kittatiny stands first. It ships and sells well, and is quite hardy. The New Rochelle is often more or less killed back. The Dorchester succeeds well, is good in quality, and is hardy. Of all the newer sorts, the Snyder appears to give the highest promise. The canes are perfectly hardy, growing to the very tips after the coldest winters. It proves to be an enormous bearer, the fruits sweet, juicy, rather soft. The Western Triumph bears shipping better, but is not so large. A valuable quality in both is their hardiness.—J. STARKEY.

Pear Trees in Fruit and Flower at the same time.—We have here some Standard Pyramidal Pear trees growing in borders in the kitchen garden, on which there is a crop of fruit of an average size, and at the same time blossoms produced at the top of this year's wood are setting. This is surely an unusual occurrence, and I shall be glad if some of your readers can point out the cause that has led to such a result. The sorts that are fruiting and flowering here are the Jersey Gratioli, Baron de Mello, General Todleben, and one or two others.—H. ROSE, *The Gardens, Graungemur, Pittenweem, Fife-shire.*

The Koolstok Pear.—This is a small Pear which is grown in large quantities in some parts of Belgium, and is the source of a considerable revenue to the small landholders there. Although not of first-class quality, large cargoes of it are annually shipped to England, and it is so much sought after by the dealers that they usually purchase the crop as it stands in May, generally paying at the rate of about 12s. per cwt. for the fruit, depositing half the money at that time, and paying the remainder when the crop is gathered. It ripens in the end of July. This Pear is well figured in the June number of the *Bulletin d'Agriculture*.

THE ARBORETUM.

THE GOLYNOS OAK.

It may, I think, be stated that this was the largest oak ever felled in England, of the cubical contents of which a really accurate and authentic account now exists. And my reasons for this opinion are the following:—In the year 1810, when it was felled, I was living near Hertford with my family, where they still reside, at Bayfordbury, two miles from that town. Mr. Ellis, a timber-merchant of that place, who had lately been at Newport in Monmouthshire, brought back in 1812 the detailed account of the tree, signed by Mr. Thomas Harrison, surveyor of the timber in the dockyard at Portsmouth. My father, mistrusting the accuracy of the statement, wrote to the late Sir Charles Morgan (the father of the present Lord Tredegar), with whom he was intimate, and whose property was immediately contiguous to the parish of Bassaleg, in which the tree grew, requesting him to ascertain the truth of it, and received from him the following answer:—

Tredegar, 13th July, 1812.

My dear Sir—I have made very particular inquiries since I had the pleasure of hearing from you relative to the great oak, which I remember perfectly well, having seen it after it was cut down, the trunk divided into four parts, each of which I could not see over as it lay. Every particular in your paper is correct; the reason of its being sold for so little money was the general opinion that the heart would be decayed, and because it belonged to different people wanting money, it was sold injudiciously.—Your's faithfully,

C. MORGAN.

The following is Mr. Harrison's statement, which the foregoing letter confirms:—

Dimensions of the large Oak felled in 1810 on the Golynos estate in the parish of Bassaleg, and county of Monmouth, and situated within four miles of the seaport town of Newport, in the said county:—

				Cubic feet.
Body, at 10 feet long	...	...	...	450
Limbs and collateral parts	...	1st	...	60
"	"	2nd	...	106
"	"	3rd	...	355
"	"	4th	...	472
"	"	5th	...	235
"	"	6th	...	113
"	"	7th	...	28
"	"	8th	...	156
"	"	9th	...	82
"	"	10th	...	70
"	"	11th	...	98
"	"	12th	...	75
Dead limbs	...	...	...	126
				50) 2,426

Total contents ... 48 loads, 26 feet.

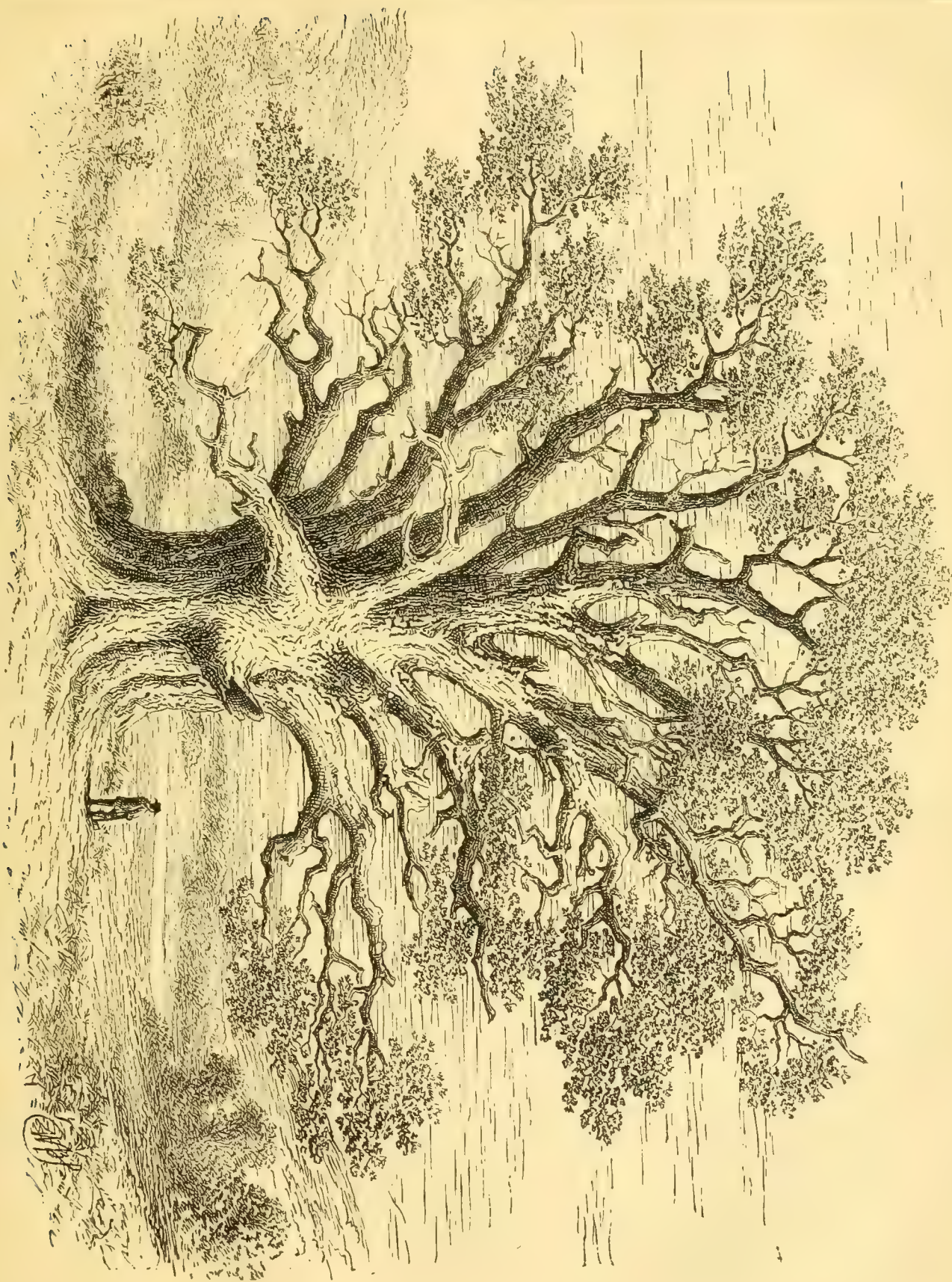
and, therefore, deducting the contents of the dead limbs, the tree produced forty-six loads of sound convertible and converted wood.

Process of felling the tree:—Six of the collateral limbs were first sawn off. Two stages were then erected, and the tree was cut from the crown to the bottom in a perpendicular direction, and the remaining part of the tree was felled in three parts. The quantity of bark was 65 cwts., and there were sixteen stacks of wood. Fourteen principal pieces were used for naval purposes, and various conversions for other purposes.—(Signed) THOS. HARRISON, Surveyor of H.M.'s Dockyard.

Mr. Harrison bought the tree for 100 guineas, but its real value proved nearly £600. I may add that the drawing, from which the accompanying illustration was prepared, was done by a very clever amateur artist, my brother-in-law, the late William Franks, Esq., of Woodhill, near Hatfield, Herts.

Golynos is on the stratum called by geologists "the old red sandstone," which is so favourable to the growth of the Oak. This tree was thought to be *Quercus pedunculata*, not *Q. sessiliflora*. Whatever opinions may be held elsewhere upon the merits of these two varieties of Oak, none prevail in the places of their growth. *Quercus*

THE GOLNOS OAK.



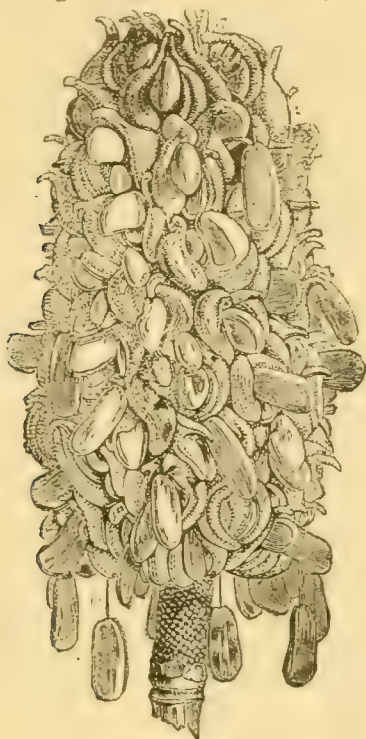
pedunculata adorns and enriches the red soil of Monmouth and Hereford. *Quercus sessiliflora* prevails in the borders of Wales, where it is known to be inferior both in size and in beauty to *Q. pedunculata*. It is of slow growth, and its flat shining leaf turns to a dingy red, while the lofty free-growing *Quercus pedunculata* is still green and vigorous. Mr. Andrew Knight, who was acquainted with the qualities of both varieties, always maintained that the timber of *Quercus pedunculata* was the firmest and best of the two.

Long Cottage, Fontham, July 29th, 1873.

R. C. BAKER.

MAGNOLIAS.

BEAUTIFUL as Magnolias of all kinds are, they are by no means so commonly met with in gardens as one could desire. About twenty species belonging to this genus, all more or less deserving of cultivation, are known to botanists. Naturally these are distributed over the Southern States of North America, Northern India, China, and Japan, and many of them succeed well in warm, moist, sheltered positions in the south of England, producing multitudes of deliciously-scented flowers



Magnolia fruit.

during the spring and summer months. One of the finest of them is the noble *M. grandiflora*, which in the Southern States of America attains a height of from 50 to 100 feet. Some kinds of Magnolia make noble ornaments when isolated on the turf and protected slightly during severe weather, but a sunny wall is the best position for them, and on warm soils south of the Trent several species grow well and flower profusely. Their roots should be mulched during winter with stable litter or half-decayed leaves, in order to protect them from hard frosts. Magnolias are naturally divided into two sections, one deciduous, the other characterised by having fine evergreen shining foliage, much larger, but in other respects similar to that of the common Laurel. The most effective of the deciduous group is *M. conspicua*, which flowers very profusely in spring. Last April we saw a noble specimen of this species in the garden of Mr. Bohn, at Twickenham, bearing a glorious profusion of sweetly-perfumed blossoms. This specimen was about 20 feet in height and 12 feet in diameter, bearing at the time just indicated close on two thousand flowers and unexpanded buds. This species and one or two others are admirably adapted for growing in small

pots, and prove very useful in early spring as decorative plants either for the conservatory or drawing-room. They bloom from the apex of nearly every twig, if the preceding year's growth has been well ripened, and a single flower is quite sufficient to scent a room for the evening. All deciduous kinds grow well grafted on *M. discolor* as a stock, which is itself freely propagated either by means of seed or layers. For pot plants or for dwarf bushes, they may be side-grafted or inlayed on the neck or collar of the roots any time during July or August. After grafting, plant them out in a close frame for a month or six weeks, and after the union has taken place, pot them and set them under a north wall, where they will soon get thoroughly established. Seedlings of *M. grandiflora* make the best stocks for all the evergreen kinds. As most of the species are raised freely from seed, it follows that they vary to a considerable extent, both in minor details of habit, size and colour of the flowers, and also in time of flowering. The following are a few of the best species in cultivation:—

NARROW-LEAVED MAGNOLIA (*M. acuminata*, *syns. M. rustica* and *M. Pennsylvanica*).—A robust deciduous species, met with in moist localities from New York to Georgia, growing from 60 to 80 feet high, and forming trunks 4 to 5 feet in diameter at the base. It has dark green foliage, and showy flowers yellow inside and of a glaucous or bluish-gray colour without. It forms a noble tree on the lawn in moist sheltered localities, and blooms from May to July. Both this species and *M. tripetala* have wood of a dark brown or mahogany colour. It is freely propagated from seed, and, like its congeners, sports into numerous varieties and sub-varieties.

CAMPBELL'S MAGNOLIA (*M. Campbellii*).—This is a fine arborescent species from the Himalayas, where it grows from 100 to 150 feet high, and bears large crimson and white flowers, remarkable for their fragrance. The flowers are quite as large as those of *M. grandiflora*; but the plant is rare and has not yet flowered in this country. It is described by Dr. J. D. Hooker as flowering before the leaves appear in the spring. This plant is growing well in the garden of Mr. Crawford at Cork, and may soon be expected to produce its magnificent flowers.

DARK-FLOWERED MAGNOLIA (*M. fuscata*).—This is a dwarf evergreen species, well adapted for cultivation in pots for conservatory or greenhouse decoration. Its leaves are dark green, and its heavily scented flowers, which are of a dull purplish maroon or chocolate colour, are produced in tolerable abundance during the spring months. It does well grafted on *M. grandiflora*. It occasionally forms a handsome little shrub when planted in a sheltered position on the lawn, but requires some slight protection during the winter months. Flowers in summer out of doors.

LARGE-FLOWERED MAGNOLIA (*M. grandiflora*).—This is a handsome evergreen shrub, or rather small tree, either for a sheltered position on the lawn, or for planting near a sunny wall or trellis. It is remarkable for its large glossy leaves, which are bright green above and covered with a rusty tomentum beneath. It produces large white flowers during the summer months. There are several varieties of this fine plant in cultivation, which differ from each other in the time of flowering, size and shape of the leaves, and other minor particulars; but all are worth cultivation, and bear deliciously-scented blossoms. It does well in sheltered positions in the midland counties, but requires some slight protection during sharp weather. It is a native of swamps in Texas, Louisiana, Florida, and other Southern States of America.

SWAMP MAGNOLIA (*M. glauca*, *syn. M. fragrans*).—This is a dwarf shrub, bearing smooth leaves of a light green colour above, but glaucous below; hence the specific name. The flowers, which are 2 or 3 inches in diameter, white, and very fragrant, are produced during summer. This species is met with in, and very widely distributed through, the southern States of North America. It affects low-lying moist valleys, margins of rivers, and swamps, and is a very hardy species, though not so showy as some other larger-flowered kinds. Like its congener, *M. grandiflora*, this species varies considerably, two or three of its forms being tolerably distinct; *M. latifolia*, *M. longifolia*, and *M. Gordoniana* being sometimes met with in collections of hardy shrubs.

UMBRELLA TREE (*M. tripetala*).—In its native habitat this

is a small spreading tree growing 20 to 30 feet high, but in this country it rarely attains half that size. Leaves a foot long, crowded at the tips of the branches; flowers large, white, and sweetly perfumed. *M. Fraseri* is by some considered only a form of this, and is distinguished by its leaves being cared at the base. It is a native of North America.

LARGE-LEAVED MAGNOLIA (*M. macrophylla*).—Another North American tree, growing 30 to 40 feet high. The leaves are 2 to 3 feet long, eared at the base, and covered with silvery hairs on the under surface. The flowers are 1 foot in diameter, and bell-shaped and pure white in colour, with a purple centre. This is a rare species in collections, but well worth cultivation for its fine foliage alone.

SHOWY CHINESE MAGNOLIA (*M. Yulan*, syn. *M. conspicua*).—This is the most showy of the deciduous kinds, and, though rather tender, it makes a noble specimen either on the open lawn or trained along a wall. It is a very profuse bloomer, the flowers being freely borne at the apex of each well-ripened shoot of the preceding summer. It flowers in April, bearing sweetly-scented white flowers. A variety of this plant, often called *M. Soulangeana*, has its petals tinged with purple, and



Magnolia flower.

flowers at the same time as the white-flowered form. It is a native of China, and requires mulching at the root during winter. It must also be protected from the sun's rays after sharp frosts in the spring or its beautiful flowers will turn brown, and fall in many cases before they open. Few spring-flowering shrubs rival this when in flower. Planted out in a cool conservatory or winter garden it makes an attractive specimen during the early spring months.

HEART-LEAVED MAGNOLIA (*M. cordata*).—This is a noble deciduous species, growing from 30 to 40 feet high in its native swamps of South Carolina and Upper Georgia. It also grows by the margins of rivers and streams, and should be planted in a low-lying moist position, either on the lawn or in pleasure grounds. The branches are stiff and somewhat erect, bearing stalked heart-shaped foliage and yellow flowers from 3 to 4 inches across. Planted singly on the lawn it forms a fine object when covered with its yellow blossoms, which are freely produced in June and July.

PURPLE-FLOWERED MAGNOLIA (*M. discolor*, syn. *M. purpurea*).—This is a rather low-growing shrub, with dark green deciduous foliage, and large six-petaled flowers. On the outside the thick wax-like segments are of a deep purple

colour, and creamy-white within. It blooms very freely during April. A variety of this species, *M. Lenné*, is a stronger grower, and bears larger blunt-petaled flowers, of a reddish purple outside and white within. It is of continental origin, and was figured and described, in 1864, as the best of the deciduous class.

ORNAMENTAL HEDGES.

LIVING hedges, formed either of evergreen or deciduous flowering shrubs, are in general much better adapted for pleasure-grounds than formal dead fences, and, when judiciously placed, contribute in no small degree to enhance the interest felt in our gardens. Hedges of evergreen shrubs are also valuable in particular cases, as screens to hide objectionable features either in the garden or grounds. Honeysuckles, Hop plants, Virginian Creepers, Grape Vines, and many other climbing and trailing plants make very effective fences during the summer months, but require a trellis or framework to support them. The golden-leaved Honeysuckle (*L. aureo-reticulata*) is well adapted for training over a screen or rustic timber fence, and bears cutting in with the shears, a proceeding that improves its habit and induces it to produce its sweetly-scented flowers in abundance; this it seldom does if left unpruned. Many Coniferous plants make first-rate fences and screens for sheltering purposes. Hornbeam and Maple are effective when in leaf; and for stout outside fences to resist cattle, we have but few shrubs more useful than the White Thorn commonly used for this purpose. Fences in the flower-garden or pleasure-grounds will require to be neatly clipped or trimmed once or twice during the season, which operation not only improves their appearance at the time, but also makes them grow more close and bushy.

ROSE HEDGES.

Hedges formed of Roses, or Sweet Briar, or of both combined in one fence, are very effective. Such hedges are seldom met with, and yet, when covered with delicately perfumed flowers, few fences have a more pleasing appearance. When planted in good soil Roses grow luxuriantly, flower profusely, and bear any amount of training. Nearly any of the strong-growing Perpetuals, Teas, or Noisettes may be planted for fences as well as the Scotch and Ayrshire kinds. Gloire de Dijon, Blairii No. 2, Lord Raglan, Fortune's Yellow, Alba (Félicité), Laura Davoust (in sheltered situations), and Bennett's Thoresbyana are all good Roses for fences. Planted in well-trenched and well-manured soil these grow vigorously, and only require occasional training in the way required, and a little thinning and pruning early in spring to keep them in good order. I have no doubt that on warm well-drained soils Maréchal Niel will make a capital fence Rose, as it is well known to do remarkably well planted out in several places round London. I saw a fine plant of it the other day completely covering a tall wire trellis, and making shoots in the open air as thick as one's finger. Roses for fences should be on their own roots, or worked on the Manetti stock, and they soon establish themselves if liberally treated. During winter they should be mulched with a good layer of rotten stable manure, which not only protects but nourishes the roots also when forked in after all danger from severe frost is past. In pruning, cut out all the smallest shoots, and in the case of the weaker-growing kinds cut them well back to one or two eyes; but robust growers may only have the unripened tips of their shoots foreshortened.

BERBERIS DARWINII.

A neat and effective dwarf fence may be formed of this Berberis, which blooms profusely early in spring, and is robust and bushy in habit. Its brilliant orange flowers contrast well with its bright green foliage, and the plant can be kept within bounds by a judicious use of the knife. It grows from 2 to 4 feet high, and in addition to its being used as a fence it may be employed with good effect as a solitary specimen on the lawn. This is one of the prettiest of spring-flowering shrubs, and, owing to its free-flowering habit and manageable size, admirably adapted for villa or suburban gardens.

COTONEASTERS.

Cotoneaster microphylla makes a charming hedge plant; but at first it requires some slight support, and for this

purpose a row of stout stakes, connected by means of a slender lath nailed along the top, is amply sufficient. It is evergreen, and makes a dense fence, bearing small white flowers in spring, succeeded by an abundant crop of scarlet berries, which render the plant very ornamental all through the winter. All the *Cotoneasters* grow well in a warm sandy or gravelly soil, and soon establish themselves; but for fences *C. microphylla* is the best, and it is also a fine plant for walls or rustic trellises.

GORSE OR FURZE.

Common Gorse or Furze, and its double-flowered variety, form dwarf fences on dry sandy soils of a striking and effective kind. They become in spring one dense mass of golden-yellow, and are admirably adapted for planting on dry shelving banks, amongst rocks, or on the top of a sunk fence. Thus situated, they hang over and droop down the face of the wall in dense green masses, often enlivened even in the depth of winter with golden blossoms. Furze is readily propagated by means of seed sown, as soon as ripe, in light sandy soil. In many waste districts quantities of seed may be collected, or it may be obtained from most seedsmen.

SCREENS.

For these common Yew is one of the best plants which can be employed, forming, as it does, dense masses of dark green foliage, especially if kept closely trimmed in with the knife or shears. Hedges of this kind are useful for cutting the Melon or frame ground off from the rest of the garden, and in addition to Yew they may be formed of Privet, Box, Holly, Beech, Abor-vitæ, Common Bay, Portugal Laurel, and several other dense-growing shrubs; few, however, answer the purpose better than Yew, Holly, Box, and Privet, these being easily kept in order, and always fresh and green, even during winter. To form these screens is not a difficult matter; all that is required is to trench the ground 2 or 3 feet deep, and to add a few barrow-loads of well-rotted manure. The shrubs may be planted close together for immediate effect, and should be liberally supplied with water at the roots until they have become thoroughly established. B.

PINE TREES AT BOURNEMOUTH.

THIS interesting and favourite watering-place is described as if it were a kind of local Switzerland, "a region of Pine-trees." The aborigines say that the trees are like themselves, indigenous. But this can hardly be, though numbers of them may be self-sown. The chief among them, and the most aged, are patriarchal. Now I shall be exceedingly glad, and, no doubt, so will other readers of THE GARDEN, if some one who knows Bournemouth, and who can speak with confidence as to the history of these trees, will state what is known about them. Also what botanical species they are. There is more than one species, most certainly; perhaps there are several, though one is by far the commonest, the short-leaved piece which I enclose, giving a fair idea of the foliage. The cones of this are about 2 inches long, and depend vertically. Another species, rather plentiful, is represented in the long leaves (8½ inches) which I enclose; the cones are about 4 inches long. Probably you can yourself give the names of these two trees, and some one else may supply their history.—L. [The short-leaved one is *Pinus sylvestris* or Scotch Fir; the long-leaved one *P. Pinaster* or Cluster Pine.—Ed. GARDEN.]

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Large Old Yew Tree.—One of the oldest trees in England is said to be a Yew tree in Darley Dale Churchyard, Derbyshire. It is calculated to be 2,000 years old. It is not very high, but its trunk is 33 feet in circumference.

A Fine Cotoneaster microphylla.—We have a specimen of this growing here which covers 5½ feet of a 15-foot wall that faces the south. It measures 3 feet around the stem, and when in bloom has a striking appearance, while, in autumn and early winter, its bead-like red berries make it the subject of general admiration. These berries are often the Christmas dinners of scores of birds that otherwise would perhaps have little to eat. The plant might have been much higher if the wall had permitted it, but it is kept clipped down every year from 1 to 2 feet, or it would have reached the bottom of the other side of the wall long ere now.—J. T., *Maesgwynne, South Wales.*

Rhododendrons.—When these have blossomed very profusely, is it advisable to cut them back? or is it well to manure them?—E. M. D. [After Rhododendrons have done blooming remove immediately the whole of the seed pods. Manure, if used, should be thoroughly rotted stable dung, spread over the surface of the ground in autumn and spring, and should be turned in with a spud. If leggy or naked, Rhododendrons may be cut back with advantage. The best time for doing this is about the end of June, or just after they have done blooming.]

THE GARDEN FLORA.

NEW AND RARE PLANTS RECENTLY FIGURED.

THE following have recently appeared in the *Botanical Magazine* :—

The Tepejilote Palm (*Chamaedorea Tepejilote*).—A decorative Palm from Mexico, with a slender stem several feet in height, terminated by five or six elegantly-curved pinnate leaves, somewhat resembling those of *C. elegans*. Its beauty is considerably increased by its producing drooping clusters of catkin-like spadices, of a bright golden-yellow colour.

Olivier's Crocus (*C. Olivieri*).—This beautiful species is a native of Greece, though originally discovered in the Levant. It blooms among the melting snow on Mount Parnes, in Greece, during the month of March. The flowers are as large as half-a-crown, of a bright orange colour, and very effective. It should be added to every collection of alpine and herbaceous plants.

Bernays' Phajus (*P. Blumei* var. *Bernaysii*).—A striking Orchid, resembling *P. grandifolius* in habit and mode of flowering, the flowers being of a clear soft yellow colour, except the backs of the sepals and petals, which are creamy white. It has been flowered by Messrs. Jas. Veitch and Sons, and is a native of Queensland.

Lebanon Iris (*Xiphion Histrio*).—This is a very beautiful Iridaceous plant from Mount Lebanon, nearly related to *X. reticulatum*. It has slender rush-like leaves, and blue flowers, streaked with greenish yellow and blotched with deep purple. It might probably succeed with us out of doors in a sheltered herbaceous border, with some slight protection during winter.

Long leaved Hypoxis (*H. longifolia*).—A beautiful tufted grass-like herb, bearing three or four showy golden-yellow flowers, at the apex of slender hairy stems. It is a native of Algoa Bay, and is a very effective plant, remarkable for its slender leaves, which are about two feet long.

Sieber's Crocus (*C. Sieberi*).—This pretty little species is the commonest of all the Greek Croci, and is found at elevations varying from 1,000 to 7,000 feet, frequently flowering among the melting snow. Its flowers vary in colour from pure white streaked with purple-lilac, to deep purple with a rich orange eye. It appears to be one of the earliest species, flowering in January and February.

The Showy Odontoglossum (*O. vexillarium*).—A magnificent species from the Andes of New Granada, very closely resembling the *Miltonias* in the eye and arrangement of its flowers. It bears five or six delicately-tinted, rosy-lilac flowers, on a gracefully arched spike, which last a considerable time in beauty.

De Jonghe's Lælia (*L. Jonghiana*).—A rare and beautiful Orchid, from Brazil, having short thick bulbs, and stout leathery foliage. Flowers large, purplish-crimson, the lips being white at the apex, and suffused with yellow and purple at the base. It is one of the most effective species in the genus, and has flowered with Messrs. Veitch and Sons.

Herbaceous Begonia (*B. herbacea*).—An interesting, though by no means showy, species, having tufted leaves and crystalline white flowers. The female flowers are solitary at the base of the leaf-stalks, while the male flowers are borne in clusters on stems a foot high. It is a native of Rio de Janeiro, and has flowered in the Manchester Botanic Gardens.

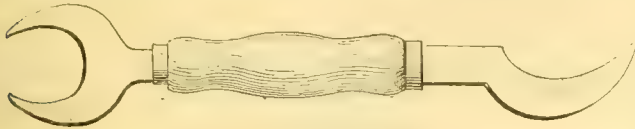
Sutherland's Greyia (*G. Sutherlandi*).—This singular plant was raised from seed, in 1859, by Dr. Moore, of the Glasnevin Botanic Gardens, but never produced its flowers until the spring of the present year, when it flowered in the Chelsea Botanic Garden. It is a robust shrub, the flowers being of a bright red colour, and arranged in a stout, erect spike. At the Cape of Good Hope it forms a small tree, growing on exposed ridges at an elevation of 2,000 to 6,000 feet, bearing as many as a hundred flowers on a spike, and forming an attractive object.

Mount Atlas Toad-flax (*Linaria heterophylla*).—A pretty, erect-growing, white-flowered annual, growing at the base of the Greater Atlas (Morocco), and somewhat resembling our native *L. vulgaris* in general appearance and habit. It produces its flowers in June and July in an ordinary herbaceous border.

The Abyssinian Primrose (*Primula verticillata* var. *sinensis*).—This is a pretty species, suitable for growing either in pots or on rock-work, and bears a profusion of bright yellow flowers in two whorls. It comes freely from seed sown in light earth as soon as ripe, and makes an effective decorative plant, well adapted for grouping with its bright purple-flowered congener, *P. japonica*.

A NEW ASPARAGUS GATHERER.

BELOW we figure a very ingenious implement recently invented by M. Borcl, by the help of which the labour of gathering Asparagus in the usual way is very much diminished. The entire length of the tool is 1 foot. In the centre is a wooden handle about 5 inches long, in one end of which is inserted a roundish steel fork 2 inches across, the prongs of which are slightly bent sideways in opposite directions. At the other end of the handle is a stout knife, somewhat like a pruning-knife in shape, but furnished with small teeth like those of a sickle. The implement is used as follows:—With the forked end the soil is loosened and removed to a proper depth from about the Asparagus shoot, which is then caught between the prongs of the fork, and by simply twisting the implement, the shoot is broken off and drawn out. The knife end is merely kept in reserve for cases in which the fork fails to detach the



New Asparagus Gatherer.

shoot. The commission appointed by the French Central Society of Horticulture to inquire into the merits of this invention, having fully tried it by putting it to a practical test in an Asparagus bed, are unanimous in their opinion that it is a most serviceable and effective implement. The price at which it is sold is 3s.

ON THE LEGENDS OF CERTAIN PLANTS.

SOME plants are emblematical on account of certain events or customs: of these are the natural emblems. The Rose of England became especially famous during the wars of the Roses, after which the red and white were united; and the Rose of both colours is called the York and Lancaster; but when these flowers first became badges of the two houses we cannot discover. The Thistle is honoured as the emblem of Scotland, from the circumstance that once upon a time a party of Danes having approached the Scottish camp unperceived, by night, were on the point of attacking it, when one of the soldiers trod on a Thistle, which caused him to cry out, and so aroused the enemy. The Shamrock of Ireland was held by St. Patrick to teach the doctrine of the Trinity, and chosen in remembrance of him; it is always worn by the Irish on St. Patrick's day. The Leek, in Wales, as a national device, has not been satisfactorily explained, otherwise than as the result of its having the old Cymric colours, green and white. In France, the Fleur-de-Lis, is so called as a corruption of Fleur-de-Louis, and has no connection with the Lily, but was an Iris, chosen as an emblem by Louis VII. when he went to the crusades, and afterwards named after him. The Olive is deemed an emblem of peace; probably because, on account of its durability of growth, it was planted both in Greece and Italy to mark the limits of landed possessions. Very many plants owe their celebrity to the healing properties with which they are probably endowed, as the common names indicate. Of these are Self-heal, Woundwort, Liverwort, Lungwort, Eyebright, Loosestrife, Flea-bane, Salvia, from salvo, to heal; Potentilla, from potential, &c. But in many instances these properties used to be exaggerated and distorted in such a manner that the application of certain plants in wounds and illness, merely as a charm, superseded their being used in a way that might be beneficial; and the witches' caldrons (like those mentioned in "Macbeth," and the old British caldron of Ceridwen), which contained decoctions of all kinds of plants, mystically prepared, were looked upon as all-powerful remedies when applied with strange rites and incantations. Some plants have been famous on account of their poisonous qualities, which in various cases have made them historical. The Hemlock (*Conium maculatum*) was formerly used in Greece as the state poison, for it was the custom to put prisoners to death by its means; and it is believed that Socrates, Theramenes, and Phocion were all condemned to drink it. The Darnel (*Lolium temulentum*) is a Grass, flowering in July, which grows among Barley and Wheat, possessed of poisonous properties; it is supposed to be the Tares referred to in the parable. The Monkshood (*Aconitum Napellus*) is a very poisonous plant, into the juice of which hunters used to dip their arrows.—*Hardwick's Science Gossip*.

[We may add, in reference to the Darnel, that carefully conducted experiments, lately made with it, prove it to be harmless. For a detailed account of these, see THE GARDEN, vol. iii., p. 228.]

THE HOUSEHOLD.

BOILED LETTUCE.

THIS is a delicious vegetable, resembling Asparagus or Seakale, and yet not quite like either. Lettuces may be simply boiled and eaten as other greens, but they can be boiled and served as *entremets*, in a variety of ways. Have ready some neatly cut pieces of toast of a pale brown colour; lay them on a dish, a hot one; let each piece be of a size to hold the Lettuce and one poached egg; pour over the toast a little of the water and some good gravy; if the latter be not handy, a little fresh butter should be spread on the toast previous to pouring the water from the Lettuce; place on each piece of toast enough of the boiled Lettuce to form a flat layer; neatly trim the edges of the vegetable, and place a poached egg on the top. Or prepare some toast as above, and spread over each piece a thin layer of anchovy or bloater paste, on which lay the Lettuce; then season to taste. To prepare the Lettuces for boiling, they should be well cleansed, and the top of the leaves, if they have the slightest appearance of fading, should be cut off; leave as much of the stalk as possible, cutting off the strong outer skin. When boiled, the stalk is the most delicious part. The large Cos Lettuce makes the handsomest dish, but we prefer the flavour of the Drumhead.

How I Eat Strawberries.—You have given a receipt for Strawberry Ice; let me commend to your notice the following way of eating Strawberries. Take a quantity, and, divesting them of their stalks, place them in layers upon a dessert dish, coating each layer with pounded sugar as you proceed. All being ready, squeeze some Lemon juice over them, mix by means of a turn or two with a spoon, and you have a dish fit for a queen.—A. W. P.

Pickled Green Tomatoes.—Cut in slices, sprinkle with salt, and let them stand over night, the same as other pickles. After remaining twelve or fifteen hours in the brine, drain well and place over the fire in fresh water, changing it several times, until nearly all the salt taste is washed out; they should be allowed to get thoroughly scalded and become partially cooked. Now drain again, and make a syrup of a pint of good vinegar, 3 pounds of sugar, $\frac{1}{2}$ ounce of Cinnamon bark, and $\frac{1}{4}$ ounce of Cloves. This will make syrup for a gallon of pickles. Put the Tomatoes into the syrup when it is boiling hot, and cook until tender; then carefully lift them out and reduce the syrup by boiling it longer. After a day or so they should be heated over, care being taken to prevent the Tomatoes from being cooked too much.

NOTES AND QUESTIONS ON THE HOUSEHOLD.

The Best Way of Roasting Chestnuts.—In the South of France Chestnuts are first put into a pan of cold water, placed on the fire, and boiled until nearly soft. They are then taken out, each Chestnut receiving a small slit on the rind with a knife, after which they are put into a large flat pan (an ordinary frying pan would do) and tossed over a glowing fire until they become dry and mealy.—*Dietetic Reformer*.

Prunes a la Russe.—Stew 1 pound of Prunes with a little sugar and water till they are quite soft; take out the stones, crack them, and put back the kernels; then line the inside of a mould (first decorated with split Almonds) with the Prunes, and keep on pouring in a little jelly (a small breakfast-cupful of jelly or dissolved gelatine) to make the whole turn out. It may be made in a mould with a hole, which should be filled with whipped cream.—S.

Cucumber Vinegar (for Fish and Salads).—Take fresh Cucumbers as free from seeds as possible, wipe them and cut them into thin slices into a jar; sprinkle fine salt and plenty of pepper between the layers, and cover them with boiling vinegar. Secure them from the air, and in a month or six weeks the vinegar may be poured off clear into clean bottles, and closely corked. A little Chili vinegar improves the flavour of this preparation, and some persons slice up a mild Onion or two along with the Cucumbers.

To Preserve Fruits for Years.—Take wide-mouthed bottles and fill them with Currants, Cherries, Gooseberries, Raspberries, or Strawberries. Cover the mouths with thin muslin, and place them in a kettle of warmish water, not above the necks of the bottles. Place them over the fire, and boil for twenty minutes after the water first bubbles. Now take them out and cork them tightly, putting sealing-wax made of resin and tallow (two parts resin to one of tallow) all over the corks and necks of the bottles. Set them in a cool dry closet in a cellar, heads downward, and the fruit will retain its flavour perfectly.—S. O. J.

Cooking Peas.—No vegetable depends more for its excellence upon good cooking than Peas. Have them freshly gathered and shelled, but never wash them. If they are not perfectly clean, roll them in a dry cloth; but this is seldom required. Pour them into the dry cooking dish, and put as much salt over them as is required; then pour on boiling water enough to cover them; boil them fifteen minutes if they are young; no Pea is fit to cook which requires more than half an hour's boiling. When done, put to a quart of Peas three tablespoonfuls of butter, and pepper to your taste. Put all the water to them in which they were boiled. The great mistakes in cooking Peas are in cooking too long, and in deluging them with water.

THE KITCHEN GARDEN.

BROCCOLI AND POTATOES.

In gardens of limited extent, and even in some large places where the demand for vegetables is great, it is not always convenient to set apart, and retain till wanted, large quarters for each kind of vegetable. In many places, in short, one crop has frequently to be planted before the previous one has been removed, and success or failure in this kind of cropping depends altogether upon the amount of manure supplied. For years past I have grown a good portion of our Broccoli and winter greens between the rows of the Potatoes, and the very hardest pieces have always been selected for the Broccoli; for the firmer the land, the better they stand the severity of the winter. They also come into use more regularly in rotation in their several seasons, and form larger and closer hearts than if planted in less compact soil. Broccoli planted in newly-dug ground will probably run up quickly into luxuriant stalks and leaves, and the uninitiated may think they are looking well, but they will never make fine hearts, neither can they be relied upon to come in at their proper season; the chances are they will throw up little buttons some time during the autumn and early winter, and succumb to the first severe frost. But in firm land the growth is not hurried, the tissues of the plant are built up firmly and, if the land is in good heart from having been well manured for the previous crop, there is no lack of strength and robustness, and such plants will go through a very sharp winter indeed without any other protection than drawing the soil well round the stems after the Potatoes are taken up. They must, however, have plenty of room to grow. They will occupy, with advantage, a much larger space individually than is usually allowed them. Supposing two rows of early or second early Potatoes are planted from 20 inches to 2 feet apart, there should be two rows of Potatoes between every two rows of the Broccoli, which will place the rows of Broccoli about 3 feet 6 inches or 4 feet apart, and this distance is not too much, as it gives both crops plenty of room to develop themselves. The Potato tops should be turned from the Broccoli to the unoccupied space between each two rows of Potatoes. The best Broccoli we had this spring were planted about this time last year with a crowbar; the holes were filled in with fine soil, and afterwards a thorough soaking with water was given, which was the only attention they received. E. HOBDAV.

CAULIFLOWER.

In hot dry summers, it is often difficult to produce really good Cauliflower. If May and June are not scorchingly hot, the earliest batch may turn out, as they have done this year, unusually good; but, under ordinary circumstances, as the summer advances they either flower prematurely, or, if the plants attain to their full size, instead of forming close white hearts, they produce open unequally-shaped heads. For this the best remedy is manure and moisture. Irrigation, when applied to soils liable to burn up quickly, is a great source of fertility; but when it has to be carried out by means of the watering pot, it is a very fatiguing and expensive operation. There will probably come a time when most gardens will be fitted up with convenient watering apparatus, so that in the distribution of this necessary element, one man will be able to do the work of half a dozen in the old-fashioned way. In unsuitable soils the best plan to ensure a supply of Cauliflowers during the hot months, is to select the coolest piece of land that is available for the May and June sowings, dig out trenches the width of the spade and 1 foot deep, in the direction in which the rows are intended to run; put in the bottom of the trenches 6 inches of rotten manure, if so much can be spared, tread the manure down firmly, and fill in with soil to within 3 inches of the top; press the soil down with the head of a rake, so as to have a tolerably firm seed bed, draw a shallow drill along each trench, and sow the Cauliflower seed thinly along the centre. When the plants appear, thin them out to 15 inches or 18 inches apart. As the plants advance in growth, draw a little soil around their stems, and mulch with manure, Grass, or anything suitable that is at

hand. Such plants will grow on unchecked, and, if a watering should be necessary, being planted in trenches, the plants will get the full benefit of it. Another mode of planting Cauliflowers or other green crops, such as Brussels Sprouts, &c., where a maximum result is desired, is, after the land has been marked out in the usual way with a line, to dig out holes about a foot square, and rather more deep, put a good spadeful of rotten manure in the bottom of each hole, return the soil, press it down with the feet, and dibble a plant into the centre of each space so treated. This of course must be looked upon as a special preparation for a particular crop, and in a soil with which it is difficult to deal. I have cultivated sandy loams which might be manured and dug in the hottest weather without any necessity to feel uneasy about obtaining the necessary solidity, for the first shower or a good watering would expel the air, settle the soil, and the plants would commence growth immediately. But other soils are quite different. I have known places where, if the land had been dug deeply in summer, it would be altogether useless for immediate planting; and it is under such circumstances that the plan of digging trenches for such crops as late Peas, Cauliflowers, French Beans, &c., and placing the manure in the bottom of the trenches is so peculiarly beneficial. As a rule, never dig rank manure into any land that dries quickly, except in the autumn. Veitch's Autumn Giant is a good useful Cauliflower, and the Walcheren may be relied on for all seasons. E. H.

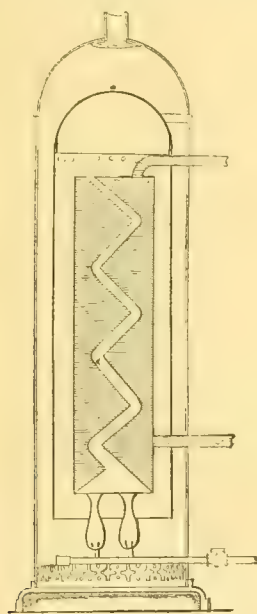
EVILS OF GROWING VEGETABLES AMONGST FRUIT TREES.

It is a bad plan to permit large overgrown fruit trees to stand in quarters of the kitchen garden, which ought to be solely devoted to the cultivation of vegetables. Who has not noticed the difference in the produce of vegetable crops, when one part has been overshadowed by wide-spreading fruit trees, and the other exposed fully to the influence of solar light? When under trees, the rains, the refreshing dews, free circulation of air, and other agencies, are prevented from acting in a manner conducive to free growth. Fruit trees, whether standards, dwarfs, or espaliers, if growing on ground devoted entirely to their cultivation, can be pruned, root-pruned, dressed, and trained, and receive all requisite attendance, without interfering with vegetable crops. I have often been grieved to see the havoc made amongst vegetables in gathering fruit from trees, some requiring a thirty or forty-round ladder to reach their tops, thus causing the vegetables to be broken down, and the ground injuriously consolidated for many yards around. Again, when fruit trees are growing by themselves, their roots do not receive such injury as is necessarily the consequence when the ground has to be dug or trenched in order to prepare it for the growth of vegetables. The application of stimulating manures, necessary for the successful cultivation of vegetables, is another source of evil to fruit trees, causing a great luxuriance of growth, and consequent barrenness. The remedy for all this is simple: plant fruit trees in appropriate situations by themselves. Give vegetables the same chance, and the results will prove satisfactory. Of course it requires time to remedy the intermixture just referred to. The cutting down of fruit trees must of necessity be progressive, and should always be executed by first removing the more worthless kinds, and such as have become cankered and barren. But young trees should be planted at once, in proper situations, and brought into a bearing state as soon as possible. In the formation and planting of new gardens, this point should be especially attended to; as then the evil may be prevented from ever occurring. I have no doubt that most gardeners have felt the annoyance of which I complain, and some are anxious to remedy the evil, but have existing prejudices to contend with on the part of their employers, who will not allow trees, although absolutely cumberers of the ground in many cases, to be cut down. I hope, however, in due time that these prejudices will yield to sounder judgment, and that we shall see the time when orchards will become strictly such, and the vegetable department be permitted to enjoy the full influence of solar light, rain, and refreshing dews. A.

Potatoes Proscribed.—Several German writers predict that nations will deteriorate in physical and mental characteristics if Potatoes become a principal article of diet. The celebrated Carl Voght says that "the nourishing Potato does not restore the wasted tissues, but makes our proletarians physically and mentally weak." The Dutch physiologist, Mäler, gives the same judgment when he declares that the excessive use of Potatoes among the poorer classes, and coffee and tea by the higher ranks, is the cause of the indolence of nations.

BARGE'S ZIG-ZAG GAS-HEATED BOILER.

This ingenious invention for heating small greenhouses and conservatories consists of a very small gas-heated boiler, attached to hot-water pipes, the boiler being so constructed that by means of a pair of minute gas burners, and with a remarkably small consumption of gas, a considerable amount of heat is generated. The boiler does not contain more than about a pint of water, and is so made that the heat is detained in the midst of the water-charged plates long enough to become wholly absorbed by them, and there is absolutely no waste. A small flue pipe carries off the products of combustion, and as a proof of the almost entire utilization of all the heat generated by the combustion of the gas, this pipe is scarcely warmed. Attached to the little boiler is about 30 feet of pipe, through which the hot water circulates until it rises at last into a flat double-bottomed tank, the bottom of which is covered to the depth of about 1½ or 2 inches with water. The hot water coming into this from the pipes soon warms the whole tank, until the sand (or other plunging material) on the top can be kept at a temperature of from 65° to 80°, and as it contains about four square feet of surface, it is used for purposes of propagation. The boiler itself is made of copper, 2½ inches square, and about 9 inches long, enclosed in a cylinder which leaves about half an inch all round it. The whole is then en-



Zig-zag gas-heated Boiler.

closed in an outer cylinder, also of copper, with a half-inch vacancy between. The object of the two cylinders is to prevent the gas being put out at any time by a down draught (the great drawback to all gas boilers hitherto constructed). The inner cylinder, within which is the boiler, can only be affected by an upward draught. If by any means a draught should blow down the flue pipe, it impinges upon the top of the inner cylinder, and passes out between that and the outer cylinder, and thus leaves the gas undisturbed. In these times, when every little garden has its plant-house or conservatory, we cannot, perhaps, do our readers better service than direct attention to this cheap and ready means of heating. This boiler, which is manufactured by Mr. Barge, Church Plain, Yarmouth, is made in two sizes. What is called the small or No. 1 boiler will heat from 30 to 40 feet of 1-inch wrought iron pipe, with a consumption of about 3 feet of gas per hour; to facilitate getting up the heat quickly, four burners are fixed to the boiler, but when once heated it only requires two burners to be kept alight. The same remarks apply to the larger or No. 2 boiler, with this exception, that it will heat from 25 to 30 feet of 2-inch wrought iron pipe, with a consumption of about 6 feet of gas per hour. To this boiler are

attached six burners, but when once heated the heat can be maintained by using only three burners. These boilers are so constructed that they can easily be fixed by any ordinary mechanic, and they can be set either inside or outside, the house, but the flue pipe must be carried to the outside and must not be smaller in diameter than the nozzle or outer cylinder. Soft or rain water should be used for feeding the boiler and pipes.

PUBLIC GARDENS.

A NOBLE STATE PARK.

IN and about this metropolis, within a radius of ten miles, 2,000,000 people are struggling for existence and the right to dwell on a few square feet of ground. Within 200 miles of us, and easily accessible, there is a region of several thousand square miles, whose only permanent tenants are wild animals and men scarcely less wild, who live by hunting them. It used to be known as John Brown's Tract; more lately it has become customary to call it by the name of its mountain range, simply "The Adirondacks." In it a few city families have, in very recent years, found summer solitudes at one or two settlements; a few entertaining letters and books have sketched some prominent features of the region; but for the most part it is as unknown to us as the continents of the geological eras—

When the bright day-star, from his burning throne,
Shone o'er a thousand shores, untrodden, voiceless, lone.

It is, however, by no means desolate; it is a land of mountains, lakes, and forests, and is deeply interesting alike to professional naturalists and the mere lovers of nature.

Mr. Verplanck Colvin, a citizen of Albany, New York, has a penchant for this wilderness. He has travelled much in it, and surveyed it instrumentally, chiefly as a labour of love. About a year ago the New York Legislature appointed a Commission of State Parks to inquire into the expediency of making the Adirondack region a public park. Mr. Colvin is one of the commissioners. A small appropriation partially paid the expenses of a more thorough survey than had ever been made before; and Mr. Colvin has thus been able to ascertain several errors in previous descriptions, so important that they entirely change the map of the region. The surveying party went up and down the sides of mountains, which are so closely packed that, from one of the more important stations, sixty measured horizontal angles represented at many visible peaks, each accessible only through trackless woods, with no sign but the compass for a guide. Mountains are there, from 3,000 to 4,000 feet in altitude, as yet nameless and unascended. Even the most rugged and mountainous portion of this wilderness is but a day's journey from Plattsburgh, a large town, reached by steamboats, on Lake Champlain. Yet is the solitude of the region unbroken. Even its romantic waterfalls are not yet spoiled by modern names. On the western side of Wallace Mountain, where the brooks trend to the Raquette River, the explorers, wandering through a marshy forest, hazy with thick, bewildering, driving clouds, at an altitude of 3,131 feet, came upon a lake of large size, not indicated on any map, whose shores had probably never before been visited by civilised man. "It was a wild, unearthly place; and, in reply to the subdued, muttered words of the guides, came the sudden snort of a deer as he fled at our approach." In the successful endeavour to ascend Mount Seward from its eastern face, it was found that previous travellers had mistaken for that mountain what was really the summit of another, known as Ragged Mountain. Between these mountains, and at its lowest part, 3,050 feet above sea level, is a gorge a thousand feet in depth, filled with forest, the ledges on its cliffs green with Moss and stunted trees. The Indians have named this Ouluska Pass—"the place of shadows." Mount Seward was for the first time ascended in 1870, by Mr. Colvin. That ascent was made from the south side. The height had previously been estimated at 5,100 feet. Mr. Colvin's first measurement brought it down 650 feet; that of 1872, with far more accurate instruments, still further reduced its height,

determining it as 4,348 feet. This mountain, a fair type of the rest, is Labradorite rock or hypersthene granite; fragments from its summit exhibit crystals of opalescent feldspar, and magnetic iron occurs throughout in scattered masses.

Travel in this wilderness embraces such incidents as we find in Cooper's novels. Indian guides are requisite. A canoe is the only craft to ascend the Raquette, a river so tortuous that a profane myth declares that the world could have been made in five days, had not a sixth been occupied in creating the crooks in that extraordinary stream. Each of the party is armed with a hunting knife and a revolver. Three days' provisions are carried in a pack. Preparation has to be made against accidents as well as against hunger, though only from the latter do Mr. Colvin and his assistants seem to have frequently suffered. A hatchet to "blaze" the path by cutting a mark on the trees about every 50 or 100 feet, forms a part of the guide's equipment. At night the party are wrapped in heavy blankets, with the roots of trees for pillows and the forest for a canopy, and with a fire glowing at their feet. Sometimes a shanty of Balsam boughs is improvised; sometimes one of logs left by some hunters, or a bark wigwam of departed Indians, is found and made serviceable. In one instance the shanty catches the sparks of the camp fire, and the occupants are burnt out in the middle of the night as effectually as if they had been at Chicago. A deserted ironworks offers one night's shelter; the "camp" of a hospitable trapper on a lake shore at 1,700 feet altitude furnishes another. Wood-craft is called into requisition, and otherwise inaccessible cliffs are scaled by using the rope-like roots of trees. Canoes are constructed on the spot to navigate lakes that white men have never seen before. Wild animals approach the sleepers by night; bones and fragments of deer killed and torn to pieces by panthers are discovered in the morning. A tree is noticed whose bark and wood bear marks of the claws of some savage beast. Abundant traces are found of bears which feed upon wild berries in the open glades. Near the base of Mount Marcy a noble deer-hound that had evidently lost his way and his owner joined the party; no deficiency of provisions, no hardships of ascent and descent discouraged the new comer. He proved a permanent acquisition.

The carpet of this wilderness is a deep, wet, sphagnum Moss, like wet snow or a sponge filled with ice-water, that keeps the feet of travellers uncomfortably cold. To procure excellent drinking water, it was only necessary to pull away the Moss. With a rubber blanket spread upon it, this green carpet became a delicious mattress for the night. In summer the level Moss swamps have the appearance of velvet; in winter they are liable to be mistaken for lakes. These peaty masses contain the sources of our rivers. When the forests are cut down the Moss withers and disappears; when the woods take fire, the Moss as well as all the soil which can support vegetation (being in fact a mere humus), is destroyed; nothing but the bare rocks remain. The writer was credibly informed last year that during the great forest fires in that region a large surface of rock was intensely heated, so that when rain fell upon it a sort of explosion took place, rending it into fragments. Great fires are usually due to the carelessness of camping parties, and their effects are irremediable. Bald Mountain is a desolate monument of one of these fires; its sides are ghastly with crumbling trunks of burned trees. Principally to fire and the axe must be attributed the recognised diminution of water supply in the principal rivers and canals of the State of New York, already offering serious obstructions to commerce. But there are also seen large spaces where the growing timber seems to have suffered an unaccountable blight; districts, once covered with noble Spruce trees, where now there is only dry rot and decay. There are other spaces where "wind-slashes" have prostrated all the trees. The population of this region, except as to the few settlements favoured by summer visitors, has been for years gradually diminishing, and there are many hamlets long since deserted. The great West has offered a more profitable field to the hardy hunters and trappers, who alone could find in the Adirondacks the means of supporting life.

Great were the successes of the present exploration. Where three large lakes were laid down upon the maps, it was found that but two existed, and those of a radically different form.

Thousands of features of the wilderness—mountains, streams, lakes—had been misplaced or totally omitted. Mount Marcy, the summit and centre of the Adirondack range, was found to be miles away from the locality assigned to it. Mount Whiteface, by this and a previous survey, was determined as 2,200 feet higher than originally described. Snowy Mountain is a hitherto unnamed, unknown peak (whose locality in the maps appeared as a level plain), which Mr. Colvin ascended and measured as 3,859 feet above tide-water. The guides proposed to call another nameless mountain, of similar height, after Mr. Colvin. The true source of the Hudson River was discovered and correctly mapped. It is a lake to the south of Mount Marcy, and is 1,400 feet higher than the lakes hitherto regarded as the highest sources of New York's greatest river. The preservation of this mountain region as a public park will prove a measure of the highest practical wisdom.

W. WYCKOFF.

New York.

[This article was sent to us accompanied by a sketch of a beautiful scene in the district to which this account refers.]

WORK FOR THE WEEK.

PRIVATE GARDENS.

Conservatories.—Although most kinds of indoor plants will now have completed their growth, they should nevertheless still receive abundance of water, be kept far apart to prevent crowding, and have plenty of ventilation. Such as are in flower on front stages will still be benefited by a little shading. Amongst plants at present in bloom are—Passion-flowers, Hydrangeas, Fuchsias, Pelargoniums, Begonias, Campanulas, Carnations, Heaths, Clerodendrons of the Kæmpferi section, Lilies, Petunias, Mitras coccinea, Tritonia aurea, Heliotropes, shrubby Calceolarias, Lobelias, Leschenaultias, Agapanthus umbellatus, Hippeastrums, Vallota purpurea, Witsenia corymbosa, late blooming Clematises, Vinca oculata red and white, Lantanas, Bouvardia angustifolia and Vreelandii, Lasiandra macrantha, Franciscea eximia, Achimenes, Gloxinias, Lapagerias, Roella ciliata, Allamandas, Asclepias curassavica, and others. Introduce from frames, pits, and greenhouses successions of flowering and fine-leaved plants, and those turned out to accommodate them, if annuals or biennials, and seed sowing is not an object, should be discarded at once; perennials should be retained, and have their flower spikes cut off, and the plants placed on north borders, or if necessary potted and placed in frames. Greenfly, thrips, mealy bug, and scale must be vigilantly searched for and destroyed.

Soft-wooded Greenhouse Plants.—Re-pot and place in pits some zonal Pelargoniums for late blooming, and pot off rooted cuttings of show varieties. Keep up a succession of Fuchsias in flower, and thin out the exhausted shoots of large plants and those used as climbers, so as to always have a good stock of young shoots. Of Gomphrena globosa have a good stock of plants, both in flower and coming forward; they may be treated like Balsams, but less liberally, and should be protected from heavy rains. Preserve some of the best flowered Balsams for seeding purposes; keep plants of them for late blooming gradually shifted as they require it, and keep the flower-buds picked off until a short time before they are required to open. Balsams, as well as Cockscombs and other Celosias, should be grown in cool pits, with the sashes removed during the day and replaced, but tilted up, at night. Sow Mignonette in pots; thin out advancing plants, and shift them, if necessary, into larger pots without injuring their roots. Sow the latest batch of hybrid Calceolarias, and prick off or pot singly plants from previous sowings. Cineraria seedlings or off-sets should be shifted when necessary, using a rich soil for the purpose, and place the plants on a layer of gravel or ashes, in a frame with a north aspect. Pot on Chinese Primroses, using a light, rich soil, and pinch and grow on moderately Bouvardias for winter blooming. Keep hybrid herbaceous and other Begonias as near the glass as possible, and shade them a little from bright sunshine. B. Weltoniensis is one of the best compact autumn blooming plants which we possess. When Begonias become pot bound give them a little manure-water occasionally. Propagate this class of plants by means of seed and cuttings; but be careful not to cover the cuttings with a bell or hand-light, as they strike better without such assistance. Young Hydrangeas for September blooming should be kept moderately close and well watered; but old stocks that were potted in spring and since plunged out of doors, or which, having their roots cut round, are now lifted and placed in large pots, will also yield a great quantity of late

blooms. Pot a few plants of the common and larger-growing varieties of Musk in rich soil, and grow them against a wall with a north aspect, for blooming between September and Christmas. Keep the different varieties of *Monochætum* in a growing temperature, and pinch them in no longer. Give *Chrysanthemums* plenty of manure-water, and take off and strike a few flowering points for dwarf plants. Tall plants produce the best single blooms, and pyramidal or mushroom trained ones the greatest profusion of flowers. Nerines that have done blooming should be kept moderately dry; and *Cyclamens* should be examined and watered a little more liberally than they have been, *Lantanas*, particularly one-year-old plants, if kept pinched until now and grown on moderately, will have formed good plants that will continue flowering for a long time. Keep succession plants of *Coleus* in open frames, merely protecting them from wind and rain; in this way they grow freely and stubbly, and seldom require pinching. A few *Coleuses* may be propagated for keeping through the winter, as young well-hardened or half-starved plants keep better than old ones, and in spring under exciting treatment they readily take to growing and yield plenty of cuttings. The same remarks are equally applicable to *Iresines*, *Centaureas*, and *Alternantheras*. Lilies, as soon as done flowering, should be placed in a sheltered position out of doors, and watered a little until their stalks have withered, when the pots may be laid on their sides to prevent wet getting to their bulbs. Treat succession plants liberally, as well as those of *Campanula pyramidalis*. Where *Dahlia imperialis* is grown, the plants should have been kept out of doors from June till now, and then introduced into a little heat, when they will soon expand their flowers. *Salvias* form excellent winter-flowering plants, and old plants may be started now for that purpose, and young ones for winter and early spring use.

Stoves.—Here, as in other plant houses, our chief object should be to get the wood well ripened. Ventilate well in the first part of the day, close early, and shade moderately. Train out the shoots of *Dipladenias* along the roof. Store away in dry places *Achimenes* and *Gloxinias* that have flowered early, and grow on moderately *Gesneras* of the *Exoniensis* section. Transfer such *Allamandas* as have come well into bloom to the conservatory, where they continue longer in perfection than in warmer quarters. Thin out the shoots of *Bougainvilleas* as soon as the flowers are shed, preserving only such as are necessary for next year's work. Keep *Apelandra Roezlii* in a growing condition; this is one of the best and most showy of winter-blooming plants. Some of the earliest started *Caladiums* may be permitted to go to rest, as may also early bloomed plants of *Clerodendron squamatum*, &c. Plants of *Euphorbia Jacquiniaeflora* and *Poinsettia pulcherrima* should be encouraged to make growth, and should be kept near the glass. The general stock of young plants may be re-potted and kept growing a little throughout the whole year. *Libonia floribunda* and *Sericographis Ghiesbreghtiana* should now be permitted to grow without further pinching; they will form good blooming plants for winter use. Preserve a young stock of *Torenia*s, *Pentas*, *Scutellarias*, *Centradenias*, *Thyrsacanthus*, &c., as well as of fine-leaved plants for decorating the front stages, baskets, and apartments. Most of the stove plants may now be increased by means of cuttings made of the half-ripe wood, as well as from seeds. Keep *Gardenias* in a vapour-bath, a mode of treatment that applies equally well to the *Eucharis amazonica*, and to *Marantas* and *Alocasias*. Stove aquariums should be kept clean from *Conferve*, as well as from the decaying leaves and flowers of *Nymphaeas*, *Nelumbiums*, and other aquatics.

Orchids.—Amongst such as are now in flower one of the most showy is *Aërides quinquevulnerum*. The chief object to be aimed at now must be the maturation of the pseudo-bulbs, and for that purpose the plants require plenty of light, and should be set pretty far apart. Plenty of water must still be given at the root, overhead, and in the atmosphere, and attention must be paid to the eradication of all insect pests. During warm weather, fire-heat may be dispensed with even in the East Indian house, and such plants as *Masdevallias*, *Odontoglossums*, *Miltonias*, &c., grow much better at this season without than with it.

Ferns.—While the weather is fine, fire-heat may almost be dispensed with, provided Ferneries containing tender plants are shut up early. Shading should still be used during strong sunshine, for the young fronds are yet tender and the sun's rays powerful. Abundance of water must be given at the roots, and a gentle syringing overhead to *Aspleniums*, *Polypodiums*, &c.; but *Adiantums*, *Nothochlænas*, and *Gymnogrammas* prefer having their leaves kept dry. A moist atmosphere must be maintained, especially in the tropical Fernery. Thick shading must be used in the case of filmy Ferns, which, if in cases, may be assisted by green gauze in addition to the ordinary canvas outside, or a thick coating of paint may be

rubbed over the glass outside. They must be kept cool and in a moist atmosphere, and gently dewed overhead daily. Take off and wipe the bell-glasses used for covering them every day, or wipe the glass inside the cases, so as to preserve a sweet and genial atmosphere. Greenhouse Ferns require to be kept cool and in well ventilated houses or pits, and hardy Ferns in pots should be placed in frames having a northern aspect, or they may be set against a wall having a similar position. Seedling Ferns, which may now be picked up on the surface of pots, damp walls, paths, old stages, and amongst Orchids, should be selected, potted, or inserted in wire baskets, or they may be left where they are, for yielding fronds for associating with cut flowers during winter and spring. The usual routine of sowing and pricking off these must be attended to, as well as the re-potting of all seedlings, which should be kept in a quick-growing condition until they are twelve months old, by which time they will have become good specimens.

Azaleas.—The earliest Azaleas should now have completed their growth and formed well-developed flower-buds; therefore, remove them to cooler quarters that are light and well ventilated. Water them plentifully at the roots, but not overhead, and maintain a moist atmosphere by spilling plenty of water about the floor and on the stages. Indeed, towards the end of this month all the plants, both early and late, should be transferred to cooler houses; but on no account put them out of doors. Pick off withered leaves, and destroy thrips, scale, and any other depredators that may make their appearance. No more pinching of the shoots should be done now; on the contrary, the maturation of the wood should be the main object kept in view. It is a curious fact, however, that young Azaleas may be treated, for the first twelve or eighteen months after being grafted and re-potted, as cool stove plants, with beneficial effects in the way of securing a strong and rapid growth; and, if properly attended to in the matter of pinching, they will form excellent and stubby plants. Those plants that were grafted about the end of June and first of July will now have taken well; therefore, the ligatures should be cut away, and the plants re-potted from thumb-pots—which are commonly used for stocks that are to be grafted—into 60-sized ones, and still kept moderately close. Proceed with the grafting of these plants, if not already finished, as recommended last month.

Camellias.—Large plants of these, now that their wood is pretty firm and their flower-buds well developed, should be placed out of doors in shady sheltered places, and their pots should be fixed in position by means of three or four stakes driven into the ground. Syringe every fine afternoon, so as to keep them fresh and clean. Such plants as are not placed out of doors should be kept in cool, light, airy houses, their leaves, if dirty, should be washed, and the plants should be kept well watered. Young growing plants, if necessary, may be re-potted, and also spring grafted plants. The ligatures may in nearly all cases now be removed from the latter; lateral growths on the stocks rubbed off, and part of the points of the stocks cut off if the scions are making good progress. Proceed with the grafting of Camellias as directed last month, and propagate an additional quantity of stocks of *C. japonica* from cuttings. If a portion of a north wall in any cool house can be devoted to this sort, its young shoots may be used every August for propagating for stocks. A close frame or a very gently heated bed is the most suitable place in which to strike them. If last year's cuttings, when rooted, have been potted singly and grown on favourably since, they may now be turned out into a cold pit, so as to get their young wood well ripened. They will then be in a good condition for "working" on next year.

Heaths.—Conspicuous amongst such kinds as are in bloom are *Marnockiana*, *Lindleyana*, *Massoni major*, *gemmafera*, *Anstiniana*, *tricolor* and its varieties, *Douglasii*, *Paxtoniana*, *ampullacea*, *Williamsii*, *rubens*, *retorta*, *Savileana*, *vestita rosea*, *ventricosa tricolor*, *jubata*, *Aitoniana* and its varieties, and several others. Pick off decayed blooms, and encourage the ripening of the wood by fully exposing the plants, either by plunging them out of doors in a bed of ashes, or by keeping them in pits or frames that are well ventilated night and day. No more pinching should be done now, unless it be to remove any useless growths in the centre of large specimens, which growths are generally very weakly and subject to disease. Do not water the plants overhead, but supply them liberally at the root, and pour plenty of water about the floor of the house or on the beds. Any young plants that were pricked off three in a small pot in the spring may now be potted off singly and placed in a cool frame.

Roses.—Cut away useless shoots and suckers, and shorten rampant and encroaching growths. Give abundance of water during dry weather, and in the first fortnight of this month the shoots that have yielded their blooms may still be cut back to a few eyes, so as to induce them to produce fresh flowering branchlets for late blooming. Old flowers should be removed as soon as they begin to fade,

otherwise they have a littersy appearance. Proceed with budding as speedily as possible, beginning with the Briar stock, which may be operated on successfully until the end of the present month, and the Manetti until the end of September. About the end of the fourth or fifth week after budding remove the ligatures, if the buds have taken well, and do not permit any shoots to emerge from the stock underneath the inserted bud.

BATTERSEA PARK IN 1873.

THE SUB-TROPICAL GARDEN.

THIS will not be at its best until the end of the month. Cannas, as on former occasions, form the bulk of several of the large beds, and are intermingled with other subjects in a few of the smaller masses. Considering that these plants are left, year after year, where they now are, with little further care than merely mulching over their roots with leaves and litter, which is removed in spring, and considering, too, their grand and showy appearance in summer, it is surprising that they are not more extensively grown than they are. The tall green-leaved sort, that forms the large clumps, is *C. Annei*, counterparts to which are the dark-leaved *C. A. discolor*, and *discolor floribunda*. *C. Van Houttei* is another free-blooming, dark-leaved, moderate-sized kind, as is also *C. Sellowii*, which is green-leaved. Prominent amongst other soft-wooded and large-leaved plants used in this department are *Ferdinandia eminens*, *Solanum marginatum*, *robustum*, and *Warsceviczioides*, *Udhea bipinnatifida*, *Wigandia caracasana*, Castor-oil plants, Tobacco plants, green and variegated-leaved Maize, &c. The large and curious leaves of *Aralia spinosa* are remarkably striking and the presence of double-flowered plants of *Datura arborea* in bloom, *Ficus* of different sorts, *Monstera*s, *Sansevieria guineensis*, *Melanthus major*, *Eucalyptus*, &c., give the whole a strikingly tropical aspect. *Abutilons Thompsonii* and *Boule de Neige* are employed in beds here with good effect, as are also some dwarf plants of the variegated *Acer Negundo*. *Gladioli* are lavishly intermixed with other subjects; and *Erythrina*s, particularly *E. Crista-galli*, are extensively used for grouping, as well as for isolated specimens, and are now coming prettily into bloom. *Agapanthus umbellatus* is here largely used as a bedding plant, as is also the *Vallota purpurea*. *Sonchus laciniatus* looks well when moderately dwarf; and *Dracenas* and *Cordylines* play an important part in beds arranged amongst other plants, or, if large, as single specimens. Of the New Zealand *Flax* many plants are used here, the smallest being grouped in beds, and the largest set out singly on lawns. The Rice-paper plant (*Aralia papyrifera*), *Acacia Lophantha*, *Griselinia macrophylla*, and similar plants, are employed to fill large beds, which are carpeted with *Heliotropes*, *Plumbago capensis*, *Lantanas*, *Amarantuses*, dwarf *Fuchsias*, *Pelargoniums*, *Violas*, &c. Some beds are filled with tall *Fuchsias*, which are just now in beautiful condition. Amongst these *F. Meteor* is used as an edging, and when pegged down close it answers that purpose exceedingly well. Among the *Coleuses*, *C. Verschaffeltii* still stands in the first rank, but *Brilliant* and *Saundersii* are also very effective. *Centaureas* of various sorts are employed both in the flower-beds and as single specimens in the borders; one of these, *C. Clementii*, a strong-growing white-leaved sort, survived out of doors during last winter, and is now very pretty. The *Coprosma Beaueriana* makes one of the most conspicuous and beautiful of edgings, and for that purpose succulents are also largely used. Sportsman *Verbena* and *Oenothera macrocarpa* are growing together as an edging, and have a pleasing appearance. Amongst succulents employed for that purpose, are the dwarf *Echeverias*, *Sempervivums*, *Mesembryanthemums*, and *Sedums*; and tall kinds, such as *Echeveria metallica*, *Sempervivum Donkelaarii*, *Cotyledon pulverulenta*, &c., are used for mixing amongst other plants in flower beds. Miscellaneous plants of different kinds are, as usual, scattered here and there on the lawns, their pots being plunged so as to give them a more natural appearance. Prominent among them are *Palms*; *Cycads*, *Musas*, *Dracenas*, *Agaves*, *Pomegranates*, and others.

ROCKERY AND ALPINE GARDEN.

The rockery, of which we gave an illustration in THE GARDEN (see Vol. III., p. 207), is at any time well worth a visit, but unfortunately it is shut up from the public for a considerable portion of the year; it is now, however, open. Here may now be seen *Clematis Jackmani* in glorious beauty, depending in graceful festoons over the faces of the rocks, in association with *Ecermocarpos scaber*, which is flowering profusely, and growing luxuriantly in a sheltered nook where it remains summer and winter. *Ivies* of different sorts, *Periwinkles*, *Sedums*, *Veronicas*, &c., are also now in full beauty. Not less interesting than the rock-work is the Alpine garden, which is an excellent representation of what such a garden ought to be. Here peaks of miniature rocks are surmounted

by the snow-like *Antennaria margaritacea*, and the Pine regions are filled with *Retinosporas*, *Junipers*, *Euonymuses*, and similar shrubs, together with an abundant groundwork of *Saxifrages*, *Veronicas*, *Sedums*, and similar plants; amongst these are intermingled choice Alpines and hardy herbaceous, as well as a great variety of greenhouse, succulents.

CARPET BEDS.

The carpet beds here are, as usual, particularly brilliant. *Alternantheras*, especially *amœna* and *magnifica*, the variegated-leaved *Mesembryanthemum cordifolium*, *Santolina incana* and *lavendulæfolia*, golden-leaved *Feverfew*, the variegated *Lemon Thyme*, small *Echeverias*, *Sempervivums*, and *Sedums*; *Lobelias*, and a few *Pelargoniums* are the plants chiefly used for this kind of decoration, and by means of constant attention and clipping they can easily be kept within proper limits. A great improvement in some of these carpet beds is studding the groundwork with nice plants of *Chamæpeuce diacantha*, the silvery and curiously-prickly leaves of which, together with the compactness of the plant, relieve and set off to advantage the highly-coloured groundwork.

FERN GLADES.

The Fern glades this year are particularly attractive and tropical in appearance; one of them is in the form of an avenue, sheltered on either side by Ivy-clad banks, from amongst which rise ornamental shrubs, the whole being slightly over-arched with branches of trees, that give shelter from stormy winds. *Arums*, *Philodendrons*, and other tropical shade-loving plants also succeed well here. A grass pathway runs through this avenue, narrow and undulated like a "mountain track," and its interest is enhanced by the occurrence here and there of *Rhopalas*, tall *Aralias*, and other indoor plants of that kind, in pots, being tastefully and harmoniously associated with it, their pots being plunged so as to give them what they really possess—a naturalised appearance. The Ferns, consisting chiefly of the Bird's Nest kind, *Aspleniums*, *Male* and *Lady Ferns*, &c., are tastefully arranged on the rising ground on each side, where they occupy conspicuous positions, and the small and feathery-looking ones are set down at random, as it were, amongst the grass. The entrance to this avenue, as well as a dell contiguous to it, are thickly furnished with Ferns of different kinds, *Anthuriums*, *Philodendrons*, *Colocasias*, and other *Aroids*, as well as with *Alpinia nutans*, *Palms*, and *Cycads* of many sorts. Besides these there are likewise tall India-rubber plants, *Dracenas*, *Aralias*, such as *A. longifolia* and *leptophylla*, *Cheirostemon platanoides*, some fine specimens of *Strelitzia augusta*, the wonderfully large-leaved *Coccoloba uvifera*, *Yuccas*, and similar plants. Old tree Fern stumps about 2 feet high, surmounted by *Platynerium alciorne*, the stumps being covered with *Cissus antarctica*, form here handsome objects; and bordering a walk near the rockeries is another Fern bank, the constituents of which mainly consist of various plain and crested forms of *Scolopendriums*, *Lady Ferns*, &c., set in a carpet richly embroidered with plants suitable for such a purpose. Here, too, may be seen not only Ferns, *Cordylines*, little *Palms* in the way of *Chamærops*, &c., but also a numerous assortment of shade-loving carpeting plants.

SHRUBBERIES AND BORDERS.

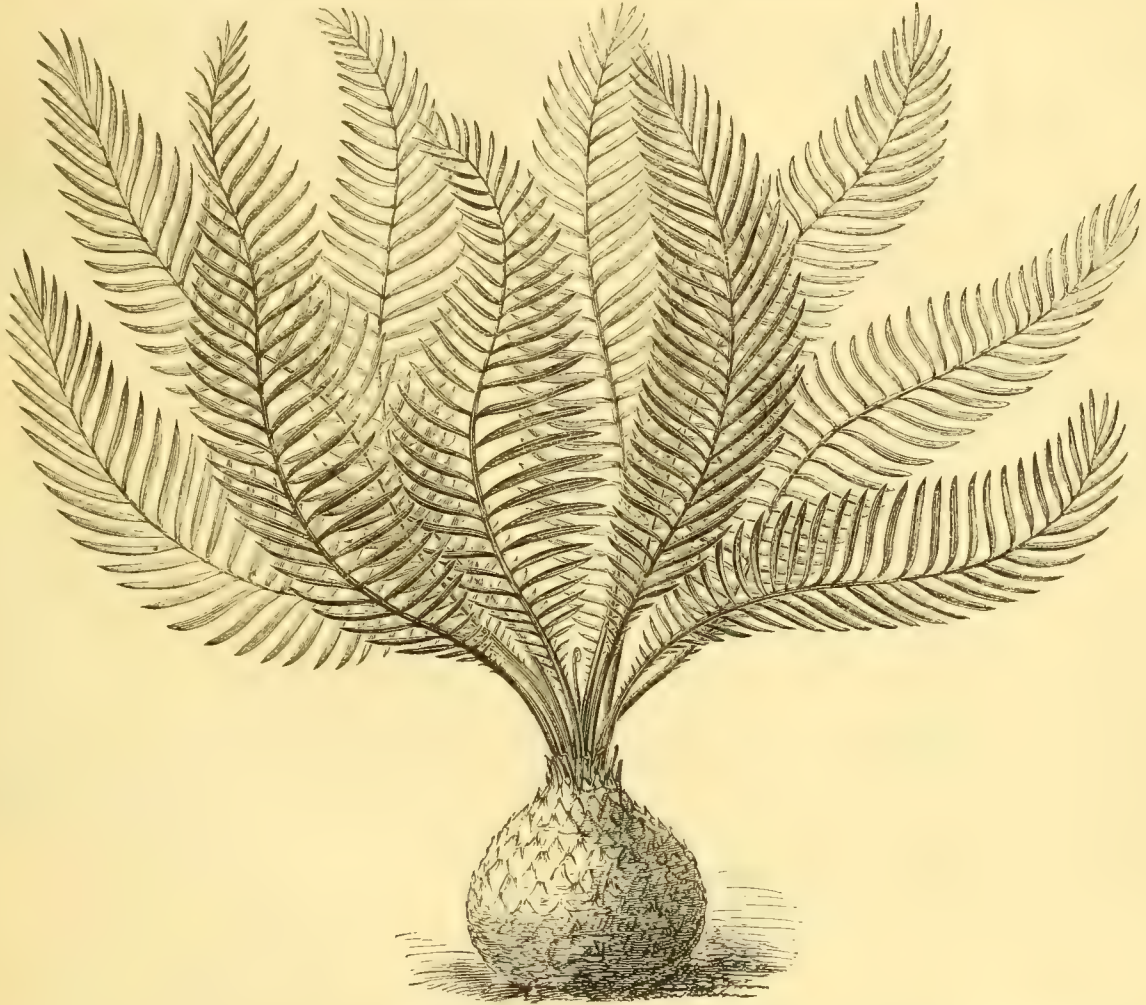
Trees in the shrubberies generally look well, particularly the *Gleditschias*, *Maples*, *Elms*, *Robinias*, &c., but the Fern-leaved Birch, graceful though it still is, has lost already much of the freshness and beauty which it had in May. *Ligustrum japonicum* is in all cases loaded with flowers; and among other charming hardy shrubs are the *Hypericum elatum* and *Nepalense*, just now in great beauty. We likewise noticed a very fine variety of the double pink-flowered *Bramble*, the blooms of which in the distance, look like so many clusters of miniature pink Roses. Conspicuous amongst subjects of larger growth is the variegated *Acer Negundo*, whose white heads have a grand effect against a back-ground of green. In front of the shrubs are *Dahlias*, *Cannas*, *Chrysanthemum pinnatum*, several miscellaneous hardy herbaceous plants, and all the banks are furnished with bedding plants, arranged more or less in the ribbon border fashion. The finest features amongst the hardy border plants are the *Yuccas*, of which there are several individual specimens, as well as groups at present in bloom. *Y. gloriosa* is perhaps the finest, but *Y. flaccida* is also in great perfection, as well as a row of *Y. filamentosa* in a border; these were transplanted out of pots in May, they are now all blooming freely.

The flower-beds around the refreshment-rooms on the water-side are well filled with various-leaved *Pelargoniums*, *Iresine Lindeni*, and *Alternantheras*, forming the principal boundaries of the pattern. The long beds near the west entrance are finely furnished, and although some of them are on the massing principle, an infinite variety seems to prevail in them. Here *Bouvardia Vreelandii* and *angustifolia* are used with advantage, and a grand addition to our rosy-purple dwarf flowering plants is *Lobelia Omen*, that blooms freely, and strictly retains its compact habit.

MACROZAMIA CORALLIPES.

THIS very distinct and beautiful Cycad has been lately introduced by Mr. Bull from New South Wales. It is a dioecious plant, both male and female having flowered in Mr. Bull's establishment at Chelsea, and from these the beautiful figure given of it in the *Botanical Magazine* was obtained. The stem, as will be seen, is swollen or sub-globose and scaly, bearing at its apex a divergent tuft of pinnate foliage, of a deep green colour, the little stalk at the base of each linear leaflet being of a bright red tint. When fully developed, as shown in the accompanying illustration, it forms a striking object either in the greenhouse or warm conservatory, rivalling in beauty the better known *Encephalartos horridus* and *E. caffer*. It should be treated after the same manner as Palms,

accomplished gentleman, and now occupied by his relative, Dr. Hamilton. In spring this tree presents a picture of floral beauty which arrests the attention and admiration of every passer-by. Later in the season, especially if it be one like the present, when it has set well, the abundance, or profusion rather, of its fruit rarely fails to arrest his footstep and challenge his astonishment. That this is not to be wondered at may be inferred from the fact that the year before last—a good fruit year—it bore somewhere near 3,000 Pears; last year the produce was almost *nil*; the present year it exceeds all that went before, it being calculated that over 4,000 Jargonelles are just now hanging in thick clusters from its branchlets. To give an idea of their profusion, we give an instance. Immediately over one of the lower parlour windows may be counted a score of Pears hanging from one spur, and within a space that the hands would cover! We mention this not as an example of what one



Macrozamia corallipes.

and like those noble plants it is both graceful and effective all the year round.

SIR PHILIP CRAMPTON'S PEAR TREE.

IN these days there is a good deal spoken and not a little written on the subject of town gardening. The theme in both instances being generally its ornamental, rather than its food-producing or utilitarian aspects. It is very pleasant to hear of or meet with successful examples of either, more especially as regards the latter, because more rarely to be met with. In the matter of fruit growing there is to be seen at the present moment in the very heart of this city of Dublin one of the most noteworthy examples perhaps to be met with in any town in the United Kingdom. We allude to "Sir Philip Crampton's Pear tree," in the front of 14, Merrion Square, North, long the town residence of that most distinguished physician and

would like to see, but of the tree's exuberant fertility. For it is much to be regretted that thinning is not attended to, and the quantity of fruit reduced to a tithe of the number the tree is allowed to bear. If this were done the size and quality of the fruit would be vastly improved, and instead of being intermittent, a crop might be fairly calculated on every year. This remarkable Pear tree was planted in its present situation many years ago by Sir Philip Crampton. It is what is technically called a rider, having a straight, clean, unbranched stem of 6 or 8 feet; the first side branches issuing at an elevation parallel with the top of the windows in the basement story, between which it is planted, its roots being entirely beneath the flagged floor of the front area. The branches are trained both perpendicularly and horizontally, as necessitated by the architectural lines of the front, the greater portion of which is now nearly covered by the tree, the uppermost shoots nearly topping the bed-room windows on the third floor. Apart from

its associations with the name of one of the most distinguished physicians and genial spirits of our time, or as an example of fruit-growing within a city, this tree might form a subject for some thought on the part of the most practical or accomplished fruit-growers. It affords a good specimen of what, in gardening parlance, is called the extension system; circumstances, as the tree progressed in height, rendering close spurring or pruning out of the question. The sun's rays never strike the surface beneath which the roots feed, and that surface, instead of being open or porous, or otherwise amenable to atmospheric influences, is hard and impenetrable, being formed of heavy closely-fitting flags. Unless the roots have found their way into the soil in the centre of the square, which is problematical enough, the food supply must be meagre, and by no means of a rich or dainty kind. Yet, with its cold hard bed and stunted commons, Sir Philip's brave old tree can put on a garb of beauty in spring, and show a crop of Pears in autumn, such as could not be seen on any tree of its kind in the best garden in the country, where the border in material and condition is entirely *selon le règle*, and the symmetry and handling of the trees mathematically correct and faultless. We shall, however, let our practical friends draw their own conclusions.—*Irish Farmer's Gazette*.

OPEN AIR VEGETATION.

FROM the commencement of this year I have, at stated periods, had occasion to notice the progress of the open air vegetation in the Royal Botanic Gardens, Edinburgh, and to remark upon its uniform lateness, as compared with last year. Even at the present time these remarks hold good, more particularly with regard to herbaceous plants, many species being still a fortnight behind their usual period of flowering, a circumstance to be accounted for in the first instance by the late and backward spring, and afterwards by the drought experienced during the months of May and June. Flowering trees and shrubs, although behind their usual time, blossomed abundantly, but continued for a very short period in a state of perfection, evidently owing to the long spell of dry weather and the easterly winds which prevailed. Seed and fruit-bearing trees and shrubs seem to promise well for an abundant crop. This result I was scarcely prepared to expect, because of the long-continued moisture of last summer and autumn, and the almost total want of sunlight. These adverse circumstances, however, do not seem to have in the least degree interfered with the proper ripening of the wood, or the perfecting of the flowers and foliage of the early-blooming trees. During no season do I recollect ever observing to such an extent the luxuriance of the foliage of ornamental and forest trees that is to be seen this year. Sycamores, Horse-Chestnuts, Elms, Ashes, Oaks, and Limes—indeed I may include almost every species of forest tree—are remarkable for their density. This unusual luxuriance of growth has, no doubt, been brought on by the moisture of last year still remaining about their roots. Many shallow-rooted shrubs and herbaceous plants have been suffering from the recent drought, still it has not affected any of the deep-rooted trees and shrubs. Conifers of every description have got over the browning noticed at the May meeting of the Edinburgh Botanical Society, and are now richly clothed with new wood. The resinous smell given out by them at this season of the year (particularly in the evenings) is very sensible. Many consider it beneficial to health to be in the neighbourhood of Pine forests during their growing season; and the modern system of freely planting villa gardens with Conifers is often done because of their supposed health-giving properties.

JAMES McNAB.

MESSRS. PENNICK AND CO.'S NURSERIES.

THESE nurseries, situated at Upper Kendalstown, Delgany, Wicklow, have long been celebrated for the fine specimens of Conifers which they contain, and also for the nice, clean, well-grown examples of other kinds of hardy trees and shrubs which grow so robustly in that part of Ireland. They are situated in a neighbourhood not only delightful in itself, but one which commands many charming views of the adjacent country, including, as they do, the Downs Hill, Bray Head, Kendalstown Hill, and also the Greater and the Lesser Sugarloaf. The village of Delgany was once the site of a monastery, now completely gone—not even a round wall being left standing. The nursery grounds are situated about a mile and a half from the sea, of which they command an extensive view. Greystones, at which is the nearest railway station, is a rising and popular watering-place. The demesne of Bellevue, which includes the Glen of the Downs, adjoins the nursery grounds. The latter contain a splendid stock of young Laurustinuses, Sweet Bays, Arbutus, Portugal Laurels, Box, and different kinds of what are called American plants, such as Rhododendrons, Kalmias, Andromedas, &c. Among the Coniferæ are, as has

been stated, many fine specimens fit for planting to produce an immediate effect. Among these may be named *Wellingtonias*, *Araucaria imbricata*, *A. Braziliensis*, *Pinus Cembra*, *P. Edgariana*, *P. lasiocarpa*, *P. Pinsapo*, *P. firma*, *Libocedrus chilensis*, *Picea Pindrow*, *P. Nordmanniana*, *Abies Williamsoni*, *A. Brunonian*, and *A. Morinda*. Ghent *Azaleas* appear to thrive well here, and *Chamærops excelsa* and *C. Fortunei* also appear to be quite at home in one of the borders, alongside of which are nice plants of *Dracæna indivisa*. The fruit-tree department also forms a most interesting feature in these well-cared-for nurseries. Being well sheltered by the great range of the Wicklow mountains, the climate of the locality, aided by its proximity to the sea, is very mild, equable, and well adapted for the successful cultivation of the plants and trees just enumerated. W. S.

CHINA GRASS.

THE Government of India is making another attempt to promote the growth of China Grass. Its stalk contains an excellent spinning fibre, and is covered with an outer skin or bast useful in paper-making. The difficulty has hitherto been to devise suitable means for separating the fibre from the woody portions of the bast at a sufficiently cheap rate to make the material command a ready sale. The Government now offers to deliver in this country quantities of China Grass, in its green state, to those who wish to experiment upon it. The fibre will be delivered free of charge, and one or more packages of 70lb. each may be obtained on application at the India Office. This plant is produced in large quantities in China, and is made up into what is called Grass cloth, a more expensive, but stiffer and less porous fabric than cotton cloth. The prepared fibre resembles the finest qualities of Orleans cotton, but is much longer in staple and looks more glossy. It combines the strength and firmness of linen with the softness of cotton, and has a more silken appearance than either.

LAW NOTE.

DECAYED CHERRIES.

TWO fruit salesmen in James Street, Covent Garden, were summoned before the sitting magistrate at Bow Street the other day to answer the charge of selling to costermongers a quantity of unsound Cherries. When condemning the fruit last week as unfit for food, the magistrate decided that the costermongers who had displayed it for sale were responsible; but, on subsequent application, he reconsidered his decision, and granted the present summons. The question was discussed at great length in court, and defendants called a man who had sold the fruit to prove that the costermongers were informed of the condition of the Cherries, and allowed to examine the baskets before the sale. Fruit could not be kept sound for even a short period during this weather, and that in question had just arrived from France. The magistrate said that he did not think the defendants had acted unlawfully—[oh!]—but considered it was the duty of the Board of Works to investigate these cases at the fountain head. The inspectors of health should examine the baskets of fruit at the warehouses of the salesmen, and one or more inspectors should be employed solely for this purpose. The summonses were then dismissed.

COVENT GARDEN MARKET.

AUGUST 1ST.

Plums, Apricots, Pears, &c., still continue to be imported from the Continent, and English fruits, both hardy and tender, are good, and realise high prices. Vegetable Marrows and French Beans are now abundant, and Potatoes are of good size and excellent quality, but amongst them are symptoms of disease, which has broken out both in Suffolk and Sussex.

Prices of Fruits.—Apples, per doz., 6d.; Apricots, 2s. to 4s. per doz.; Cherries, per lb., 6d. to 1s. 6d.; Chillies, per 100, 2s.; Currants, per sieve, 3s. 6d. to 6s.; Figs, per doz., 2s. to 6s.; Gooseberries, per quart, 3d. to 6d.; Grapes, hot-house, black, per lb., 1s. 6d. to 5s.; Muscats, 2s. to 6s.; Lemons, per 100, 8s. to 14s.; Melons, each, 2s. to 6s.; Nectarines, per doz., 6s. to 15s.; Oranges, per 100, 10s. to 16s.; Peaches, per doz., 12s. to 25s.; Pears, per doz., 1s. to 2s.; Pine-Apples, per lb., 3s. to 6s.; Raspberries, per lb., 4d. to 1s.; Strawberries, per lb., 4d. to 1s. 6d.; Tomatoes, per doz., 1s. to 3s.; Walnuts, per bushel, 6s. to 10s. ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 3s. to 6s.; Beans, Kidney, per half sieve, 3s.; broad, 2s.; Beet, Red, per doz., 1s. to 2s.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 8d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 4s.; Cucumbers, each, 4d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horse-radish, per bundle, 3s. to 4s.; Leeks, per bunch, 4d.; Lettuces, per doz., 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 4s. to 6s.; button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 9d. to 1s. 6d.; Potatoes, per bushel, 4s. to 7s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsify, do., 1s. to 1s. 6d.; Scorzonera, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, 4d. to 8d.; Vegetable Marrows, per doz., 1s. to 2s.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE GREAT MANCHESTER FRUIT SHOW.

THE exhibition to be opened at Manchester on Wednesday, September 3rd, will most assuredly be the greatest horticultural event of the year; and not merely the largest and finest in comparison with others recently held, or about to come off, but in itself so extensive, and, there is every reason to anticipate, so meritorious, that, like the Hyde Park display of art and science in 1851, it will, no doubt, deserve the epithet of "The Great." The schedule is something remarkable. In London it is quite natural that royalty should give its right hand to such an effort. Lancashire seems this time to run the metropolis close, Her Majesty the Queen heading the list of patrons, and subscribing £25, and His Royal Highness the Duke of Cambridge and the Prince of Teck following the example. Of titled personages, right honourables, M.P.'s, and others whose influence and example have, no doubt, done good service to the undertaking, there is a list, also, that a score of names would not exhaust. The Earl of Sefton and the Earl of Derby appear in it, of course; and these are followed, in turn, by the names of nearly every one interested in practical horticulture within many miles of the spot selected for the exhibition. The amount of money to be distributed in prizes is no less than £1,400—more than two-thirds of which large sum has been handed in by the patrons and promoters of the show, the remainder being provided by the council of the Manchester Botanical and Horticultural Society, upon whom rests the responsibility of the management of the whole affair. The society's work has been done so well during the last eight years, or since the Manchester exhibitions became a regularly recurring annual event, that there is no need to look for anything but their customary success. The grand and commanding feature of the Exhibition will of course be that which was originally announced, namely, fruit in every variety, and from every part of the world from which it is possible for cultivators to send it. The schedule provides a place for everybody, and so liberal is the wording, that even as a botanical display, a study for the scientific, the forthcoming show ought to be something wonderful. In class 1, the premier prize will fall to the best collection of twenty different kinds; the second prize to the best fifteen kinds; the third to the best lot of ten. Collections of miscellaneous fruit, upon trays, or in baskets; ornamental baskets of Grapes; single bunches of the same, Pines, Peaches, Nectarines, Apricots, Melons, Figs, Plums, Pears, Apples, Gooseberries, and Currants, follow in order, many prizes awaiting every description; while in pleasing contrast with the gathered fruit will be living fruit-laden plants of many kinds,—Vines, Pines, Plums, &c., all of course in pots, the aggregate displaying, in the most attractive and effectual manner, how in these modern days adroit management can transfer the features of the orchard and the vinery into the parlour. Dealers in fruit, as distinct from amateur cultivators and gentlemen's gardeners, have a class of prizes allotted solely to themselves, £20 going to the largest and most deserving collection of different sorts. Fruits of foreign growth, ripened, that is to say, in France, Italy, Germany, Holland, Belgium, the United States, British North America, and Nova Scotia, again have a set of prizes to themselves, Grapes, Pears, and Apples being chiefly required from the continent, and Apples from the other side of the Atlantic, while Turkey and Egypt are invited to come to the front with anything they please; and, lastly, in this class, a seven-guinea gold medal will go to the "finest collection of Lemons, Oranges, Citrons, Limes, and Shaddocks—open to all countries." The universality of this last competition is really quite exciting, and no less so the invitation to horticultural societies, "in any part of the world," to exhibit either fruits or vegetables from their respective districts. As an effort towards accomplishing the truly "international," though it may not meet an adequate response, it will assuredly

not fail on the side of cordiality, and, perhaps, the fact may be taken as significant that the first entry received by the secretaries has come from Paris. Along with the magnificent display of fruit will be a show of vegetables, in corresponding variety, and under such requirements as to quality as to guarantee that the whole shall be unexceptionable. The classes amount to about twenty-five, and the prizes to about seventy-five, representing a sum of £110, the premier prize being £12. Cut flowers also will be shown in plenty, Dahlias, Hollyhocks, Asters, Roses, and Verbenas in particular; bouquets, likewise, decorative pieces, plant cases, window boxes, and hanging baskets, the latter all properly furnished; and, though last, far from least, the accustomed accessories of every first-class flower show, such as Ferns, Ivies, Palms, Dracanas, Succulents, &c. Such a bill-of-fare has probably never before been offered, and the four days that the show will continue open will give no more than time for it to be carefully gone through and justly appreciated. A single visit, for critical and self-educational purposes, to a show of these dimensions, no doubt is very pleasant and, in a certain degree, useful. But, during the brilliant bewilderment of a first visit, the eye cannot possibly catch, much less retain, lasting impressions of many things most important to see and remember.

The practical results of this great forthcoming show ought to be very marked, and of the highest service to the community in another way—a way directly and vitally popular. The object in a show like this is not the purely competitive, the trying who shall exhibit the best and biggest fruit, and carry off the largest lot of honours; nor yet is it purely illustrative of the produce of different provinces and countries. To contend for prizes, and to take pride in the produce of one's own garden and one's own country is right and legitimate enough, as far as it goes; but the public, who encourage these displays, especially with their money, have a right to expect that by offering inducements to competition as to who shall exhibit the most and the best, there will in the end be more and better fruit supplied to the markets, and that the dealers will be able to sell it at lower prices. Depend upon it a thinking man who subscribes his £5 to the show does not do so purely in order to encourage Mr. A. or Mr. B. to renewed efforts in Grape growing on behalf of Lord C. or the Marquis of D. It is not to the credit of the gardening of this country that Grapes, for instance, should so generally be at the enormous price they are, often 6s. or 7s. the pound, and sometimes 15s. or more. Much greater quantities would be purchased were the price lessened, and this could unquestionably be accomplished, and a fair profit still accrue to the grower. Larger quantities would be in request, moreover, not for the sake of personal relish merely, but on behalf of the sick poor; and many an invalid who, for years has never so much as seen even a Strawberry growing, and to whom good Grapes are often almost the saving of life, might be liberally supplied with something that would soothe and heal better than any physic. Grape growing will never have become in England what it is the duty of every man who has the opportunity to do his best to render it, until the tens of thousands of our unthought-of invalids can have Grapes bought for them without any hesitation or embargo as to cost, and one of the results at least of a great fruit movement, like this coming one at Manchester, should be to set generous minds considering as to the best mode in which this much-needed work of the good Samaritan can be started in earnest. If the function of flower shows be to popularise the love of plants, and to multiply gardens and the enjoyment of them; the least to be said of a fruit show should be that in consequence of it, more people than before, and those who require it most, are enabled to buy good fruit *ad libitum*. The supply of good fruit, even in Manchester, which has never been behindhand, is by no means equal to the demand; and in several of our large towns it is positively wretched; and we cannot but think that were a Fruit Company, Limited, to be set on foot in every large centre in the kingdom, there would be a stimulus given to fruit-culture that would not only bring about a better state of things to the consumer, but honour and credit to skilful cultivators far more solid and abundant, far more lasting and more gratifying than any of the prizes in money they may be fortunate enough to win.

LEO. GRINDON.

NOTES OF THE WEEK.

— THE beautiful Water Lilies *Nymphaea Devoniana* and *N. dentata* are now blooming freely in a small pond in the open air in Mr. Beaufoy's garden at South Lambeth, as is also *Limncharis Humboldtii*. The water in which they grow is warmed by the condensed steam from the brewery.

— THE variegated Monkshood, a fine old herbaceous plant, now finely in bloom in many cottage gardens in the Home counties, deserves much more attention in "collections" than it now receives. It is very prettily coloured, and the habit fine when well grown. It attains a great height (7 feet or more) in deep sandy loams, and is one of the finest of the tall perennials.

— THE Royal Horticultural Society has passed a resolution that all vegetables exhibited as new at its meetings shall be tried at Chiswick before certificates can be awarded to them. This is rendered necessary on account of the altered appearance that sometimes exists amongst the same sorts of vegetables when grown under different circumstances. Such, however, as can be at once decided upon as being new will be exempt from this trial.

— A VARIETY of the Water-Chestnut or "Ling" (*Trapa natans*), of which we gave some account, with an illustration, at p. 208, vol. III., of THE GARDEN, has recently been discovered in Lake Immeln, in the south of Sweden. It is distinguished from the Chinese and continental forms of the plant chiefly by the greater part of the fruit being "superior," or placed above the sepals. M. Areschoug, whose account of it appears in the current number of the "Journal of Botany," has very appropriately named this variety *Trapa natans* var. *conocarpa*.

— THE excellent "Synopsis of all the Mosses known to inhabit Ireland up to the present time," by Dr. Moore, of Glasnevin, has recently been reprinted from the Proceedings of the Royal Irish Academy. It forms a handy volume of 146 pages, commencing with a clear and well-arranged analysis of the sub-orders, tribes, and genera, followed by a diagnosis of the genera and species, with the habitats of the rarer kinds and information respecting their distribution. The number of species discovered up to the present time in Ireland amounts to 369. Dr. Moore's work will be invaluable to the British Muscologist.

— IN the centre of St. Petersburg, on the south bank of the Neva, a large open space has been recently converted into a park. This space is surrounded by the principal buildings of the city, namely the Winter Palace, the Admiralty, the Senate house, Isaac's Church, and the Generalstab or Horse-guards, and opens into the three principal streets, Newski Perspektive, the Wosnesensky Perspektive and the Erbenstrasse. It has been laid out in the French style of city squares, and is tastefully planted with trees and shrubs, and embellished with three ornamental fountains. One feature in this park, worthy of imitation, is that certain portions of it have been set apart as playgrounds for children.

— WE find that *Silene Bolanderi* is figured in the *Botanical Magazine* for the present month (t. 6051) under the name of *S. Hookeri*. We have received specimens of this singular species from Mr. Thompson, of Ipswich, who has been fortunate in raising it from imported seeds sent by its most recent discoverer, Professor Bolander. Its flowers are of a bright rose colour, the tips of the fringed segments being very pale, while some varieties are said by Nuttall to be entirely white. It is well adapted for cultivation in a warm border, or on rockwork. It grows but a few inches high, and bears a profusion of fringed flowers which are about the size of half a crown and are very fugacious. The leaves are two or three inches long, dark green, and the whole plant is slightly woolly.

— FROM our fruit reports kindly furnished by correspondents in various parts of the country, and which will be found in detail in our present issue, it appears that this season Apples are in general an abundant crop; Pears only middling; Plums under the average, but abundant in some parts of Leicestershire; Cherries thin, except Morellos, which are a full crop everywhere; Peaches and Nectarines a very poor crop, except in Leicestershire, where they are plentiful; Apricots a total failure almost everywhere, the wood not having been properly ripened last autumn in consequence of the heavy rainfall, a remark which also applies to Peaches and Nectarines, and indeed to many other kinds of fruit trees. Bush fruit—that is Gooseberries, Currants, and Raspberries—very fine and abundant everywhere; Strawberries heavy crops, and the fruit of fine quality; Nuts and Filberts an irregular crop, good in some places, bad in others; Figs generally good; Walnuts generally a deficient crop, but extra heavy in Lincolnshire; Grapes on walls good; Damsons an entire failure almost everywhere, but in Worcestershire very plentiful in one or two places. In addition to the ill-ripened wood, all sorts of stone-fruit crops were very much injured this year by the 12 degrees of frost which occurred on the night of the 19th of May, while the deficiency

in the Pear crop may be referred to the frosts on the nights of the 26th and 27th of April. Peach and Nectarine trees were also greatly injured in spring in some parts by blistering and mildew.

— "A HORSE-POWER Cranberry-picker," the invention of a Wisconsin man, is among the machines recently patented at Washington.

— AMONGST the many fine hardy herbaceous plants now in flower in Mr. Parker's Nursery at Tooting is the charming *Calceolaria Kellyana*. This little alpine plant bears deep yellow flowers, spotted with brown, and although it was not uncommon in some of our best collections of hardy flowers a few years ago, it is now very rarely met with.

— MR. G. F. WILSON writes to us to say that the following Lilies are now in bloom at Heatherbank, Weybridge, viz., *L. Krameri*, a lovely pale mauve-pink, in shape like an expanded longiflorum; *L. longiflorum*, *L. l. Wilsoni*, *L. l. eximium*, *L. l. albo-marginatum*, *L. auratum*, *L. tigrinum sinense*, *L. t. Fortunei*, *L. t. erectum*, *L. t. flore pleno*, *L. Leichtlinii*, *L. l. majus*, *L. speciosum rubrum*, *L. s. macranthum*, *L. s. atro-sanguineum*, *L. s. punctatum*, *L. chalcedonicum*, *L. byzantinum*, *L. croceum*.

— THE Hydrangeas in the grounds belonging to the Crystal Palace at Sydenham are just now in fine condition; and, owing to the size of the plants, many of them measuring over 4 feet high and quite 6 feet in diameter, they have a fine effect. The majority of them have blue flowers, produced in noble masses. These, and the Hollyhock and Dahlia beds, are the best features at present in the grounds. In the gardens of the Royal Horticultural Society at South Kensington, too, Hydrangeas are in great perfection.

— THE other day, in accordance with a time-honoured usage in the city of London, the master and wardens of the Fruiterers' Company waited upon the Lord Mayor and the Lady Mayoress at the Mansion House, and presented them with a very choice selection of the fruits of the season of various kinds. The custom is referable to the metage of fruit which the Corporation of London formerly exercised within the city, and is still maintained in form at least, though the metage itself has long been abolished.

— THE works required to separate the Temple Gardens from the Thames Embankment are being executed at a cost of about £7,000. They comprise a concrete foundation, a Portland stone plinth, moulded 3 feet above the line of the paving, and an ornamental railing, reaching a total height of 11 feet, mainly of wrought iron. There are two gateways leading in from the Embankment, with Portland stone piers, each surmounted by a vase.

— WE read in the *Revue Horticole* that the Emperor of China has recently applied to France to send him a head gardener to remodel his gardens and pleasure grounds on the plan of those about Paris, of which he appears to have heard some wonderful accounts. The Emperor is following the example of the Khedive of Egypt, who a few years since employed M. Delchevalerie and a number of distinguished French gardeners, at very liberal salaries, to construct his famous gardens at Cairo. In liberality, however, the Emperor outshines the Khedive, as he offers his future head gardener £2,400 per annum, with apartments in the house of the French Ambassador at Peking!

— MR. GILBERT, of Burghley, writes to us to say that he has been greatly puzzled for some time to know the reason why black-birds and thrushes have not been so troublesome to fruit this season as usual; but that now he has solved the problem. The ground below his bushes is heavily mulched, and on walking round the other evening he observed these birds flying out of his bush plantations by the score. On examining the fruit, he found scarcely one touched; but on casting his eyes on the ground, he found the mulching punctured with worm-holes. It was, therefore, clear that by mulching, the soil is kept sufficiently moist to induce worms to come to the surface, and that the birds preferred them to the fruit, the mulching thus serving the double purpose of saving the fruit and keeping the roots cool and moist.

— A SINGULAR practice has of late been adopted by fruiterers which cannot be called adulteration, but which is very near akin to it. Persons on buying West Indian Pine Apples at fruiterers' shops are asked whether they wish to purchase "heads" to the fruit. In other words, West Indian Pine Apples are dressed for dessert at a small cost as British hothouse Pines, by the ingenious plan of inserting in the summit of the fruit a tuft or crown of leaves belonging to the latter, and thus guests are deceived into the notion that the Pineapple which graces the table was grown in the hothouse of their host, who probably never had a hothouse, and knows nothing about the cultivation of Pines. This may be considered a small matter, but if fruit and flowers once take to artificial methods of enhancing their attractions, all confidence in the garden will be destroyed. A West Indian Pine Apple has no more right to wear a British crown than an Apple or a Peach has to employ rouge for the purpose of concealing its pallor or heightening its bloom.

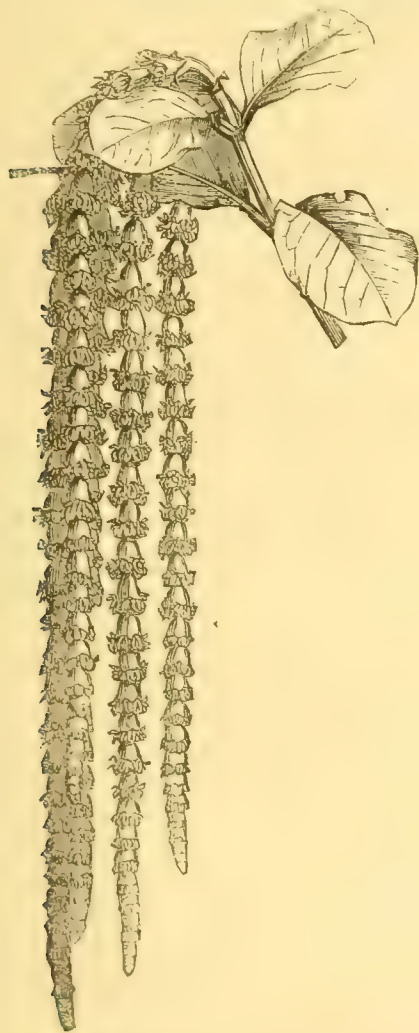
THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

(GARRYA ELLIPTICA).

THIS forms a fine hardy evergreen bush, which grows from 6 to 10 feet high, and has a rather dense and spreading head, furnished with numerous slender shoots, which are downy when young, but quite smooth when fully matured. It is a native of North-west America and California, and was first introduced in 1828. It is easily increased either by layers or

Male Catkins of *Garrya elliptica*.

by means of cuttings of the half-ripened shoots, and grows freely in any good garden soil. The leaves are opposite, somewhat oblong or elliptic, with a small acute point, rather wavy when young, thick and leathery in texture, set on short footstalks, persistent, of a dark shining green above and hoary beneath. The flowers, which are unisexual and on distinct plants, are arranged in pendulous catkin-like racemes, with connate bracts, and are produced from December to March. The male flowers form very long, slender, pendulous catkins from 6 to 10 inches in length, and are of a greenish-white or yellowish colour, while the female ones are produced in short green catkins not more than 3 or 4 inches in length, and are very deficient in graceful appearance compared with that of the male ones. The fruit, which is produced in compact bunches, is a berried pericarp containing two hard bony seeds, as large as a moderate-sized black Currant, and of nearly the same colour. All the plants of this *Garrya* originally

raised from Douglas's seeds proved to be males, and it was not until Hartweg, in 1848, sent two female plants to us from California in a Wardian case, that that form was known in a living state in Europe. The female plants first flowered and

Female Catkin of *Garrya elliptica*.

fructified in 1850, and from their seeds plants of both sexes were afterwards raised.

Fine Forest Growth in the Wabash Valley.—In a description of the vegetation of the bottom lands of the lower Wabash, Mr. Robert Ridgway gives numerous particulars respecting the dimensions and habit of the prevalent forest trees. These number nearly 100 species, of which about seventy exceed 40 feet in height, about fifty exceed 70 feet, and nearly thirty are known to reach or exceed the height of 100 feet. The ordinary height reached by the forest-mass is about 130 feet; and above this general level, occasional trees rise to an altitude of 200 feet, or perhaps more. The largest of these trees is the Plane (*Platanus occidentalis*), attaining sometimes a diameter of 20 feet and a height of 200, with the lowest branches 90 or 100 feet above the ground. The Tulip tree (*Liriodendron tulipiferum*) is the second in size, being found 180 feet high, and 37 feet in circumference. A stick from this tree is mentioned as measuring 74 feet in length, being straight and symmetrical, and tapering from 23 feet to 18 in circumference. The tallest Cottonwoods (*Populus monilifera*) are equally high. The Pecan (*Carya olivaeformis*) reaches 175 feet in height, with a clean straight trunk of 60 to 90 feet. Among the Oaks the most stately and symmetrical is the "Spanish Oak" (*Quercus coccinea*, var.), frequently 150 feet high and 15 to 20 feet round; while the most massive is the Burr Oak (*Q. macrocarpa*), of equal height and rather larger diameter. The White Ash follows, nearly 150 feet high; the Black Walnut 125 feet high, and over 20 feet in circumference; and the White Oak, 140 feet high, and over 17 in circuit. The tallest tree in proportion to its girth is the sweet gum, which exceeds an altitude of 160 feet, with a clear stem of over 100 feet, and a maximum circumference of 17 or 18 feet. The Honey Locust attains a height of 120 feet, the Red Maple exceeds 100, and even a Sassafras has been measured which had reached a height of 95 feet.

THE FRUIT CROPS.

SOUTH EASTERN DIVISION.

Middlesex.—**Portnall Park, Virginia Water.**—The fruit crop on standard trees in this district is most unsatisfactory, in some cases even amounting to a total failure. Of fruits on trained trees we have an excellent crop; of bush fruits the crop has been most abundant, excellent in quality, and generally free from blight. Strawberries have been very plentiful and good.—**THOS. MAY.**

—**Syon, Brentford.**—Peaches and Nectarines hereabouts are a thin crop; Apricots, moderate; Plums, fair; Cherries, good; Pears, thin; Apples, plentiful; bush fruit and Walnuts, abundant.—**J. WOODBRIDGE.**

Surrey.—**The Denbies, Dorking.**—Apricots, none; Apples, plentiful; Cherries, moderate; Currants, good; Figs and Gooseberries, moderate; Pears, half a crop; Peaches and Nectarines, very scarce; Plums, none; Nuts and Raspberries, plentiful; Strawberries, moderate; Walnuts, very few. The adverse state of the weather during the spring months did great injury to the fruit crops in this high-lying district.—**JAS. DREWETT.**

—**The Deepdene, Dorking.**—The fruit crop here is the best we have had since 1870. Apples are plentiful and the fruit looks clean and free from maggots; Pears are a fair crop; there was plenty of bloom, but it was much cut off by the sharp frosts which occurred in April; some varieties are very thin; Peaches are very partial, some trees having plenty on them, others none; Nectarines none; Apricots are very thin; they set abundantly but were cut off by the frost; Plums are good on west walls, but very thin on the east aspects, they are a thin crop generally; Cherries good, especially Morellos; Strawberries are a very heavy crop; and Gooseberries, Currants, and Raspberries are very plentiful; Walnuts none; Filberts plenty; Figs good; on Vines on walls there is a good crop generally.—**J. BURNETT.**

Kent.—**Preston Hall, Aylesford.**—Apricots, almost a failure; Apples, abundant; Pears and Plums, moderate (some trees heavily laden, others fruitless); Peaches and Nectarines, moderate (trees injured by blistering and mildew in the spring); Nuts, very thin; Cherries, a fair average crop; Currants, Gooseberries, and Raspberries, abundant.—**W. BRADLEY.**

—**Chevening, Sevenoaks.**—Apples here are a good crop, as are also Peaches, Nectarines, Grapes, Melons, Strawberries, and Cherries; of Apricots and Walnuts we have only about a quarter of a crop; Plums and Pears are about half a crop; Raspberries, Gooseberries, and Currants are heavy crops; Filberts are good; Figs, about half a crop.—**D. COE.**

Berkshire.—**Colehill, Shrivenham.**—Apples, light, half a crop; Apricots, total failure; Cherries, with the exception of Morellos, very thin, destroyed by late frosts; Figs, moderate; Peaches and Nectarines, total failure; Pears, very thin, all the best kinds a total failure, destroyed by late frosts; Plums, on walls, very thin, standards, including Damsons, a total failure; Currants, red, white, and black, an immense crop, and the fruit very fine; Gooseberries, good, where not injured while in bud by birds; Mulberries, good; Raspberries and Strawberries, abundant, and fruit very fine; Filberts, good; Walnuts, moderate. Fruit crops here are unsatisfactory. In the case of Apricots, Nectarines, and Peaches, we had scarcely any flower, no doubt the result of the last two unfavourable summers. The trees were in a bad state, the wood was not ripened, and, in the case of Nectarines and Peaches, straggling leaves remained green through the winter, and were only removed by means of the knife in the spring. What little flower there was on Apricots came very irregularly, and continued up to the middle of May. The trees are, however, looking better than they did this time last year, and with a fine autumn we may expect a better state of things next year. Plums, too, flowered sparingly. Pears flowered and set well, but were cut off by late frosts. The Apple crop looked much more promising a month ago than it does now.—**HENRY ECKFORD.**

—**Royal Gardens, Frogmore, Windsor.**—Apricots are, generally, a very thin crop, in many places, indeed, a total failure; of Apples we have a heavy crop, but the fruit in most cases is likely to be small. Pears, both on walls and on standards, are a fine crop, and the fruit is clear and free from spot; Plums are thin, generally, and the fruit is still dropping; Strawberries have been generally plentiful and of better quality than usual. Dr. Hogg, Mrs. Radcliffe, Fairy Queen, Cockscomb, Frogmore late Pine, J. Powell, Sir J. Paxton, and La Grosse Sucrée were the best here. Peaches and Nectarines promise to be of first-rate quality, but the crop of both is below the average; of small fruits we have very heavy crops of all kinds, and of excellent quality; Filberts are thin, and Walnuts are also thin in many spots, but some trees are bearing heavy crops. The cause of failure in the Apricot crop must not be attributed to spring frost, as we had no frost to injure a blossom. The misfortune was doubtless brought

about by the mild weather in the fore part of the season up to January, followed by weeks of cold weather, causing a check to the trees after having been early excited; the thin Peach crop may be attributed to the same cause.—**T. JONES.**

Hampshire.—**Stratfieldsaye, Winchfield.**—Of Apples we have a fair crop, but many of them are misshapen, and will probably crack from the effects of the frost on the 20th of May. Of Pears we have very few indeed, the blossoms being destroyed on the nights of the 26th and 27th of April; Peaches and Apricots are less than half a crop; they bloomed well and set well, but though thoroughly protected from frost, seemed quite unable to make headway during the chilly weather of April and May. Of Plums we have scarcely any; they were not protected; of Cherries, where protected, we have a fine crop; Strawberries, though the earliest and strongest blooms were killed by frost, are, nevertheless, an excellent crop; Raspberries are abundant and fine; Gooseberries, where sheltered, plentiful, where exposed, scarcely any; Currants, a fair crop, but the trees are scarcely yet recovered from the effect of losing their leaves in the summer of 1871.—**JAMES BELL.**

—**Heckfield Place, Winchfield.**—Out of door fruits hereabouts are much better than was at one time expected, for on the 20th of May the thermometer registered 6° of frost, and then Apples, Pears, and Strawberries were in full bloom; notwithstanding this, however, there are splendid crops of Apples, extraordinarily fine crops of Strawberries, and also of Pears on walls, but on standards Pears are very thin and partial; Peaches are only half a crop; Apricots a full crop here, but in the district generally they are very thin, and in many places there are none; Plums here are a complete failure, but this I attribute to the heavy crops which they bore last year, and also to the industry of the feathered tribe in early spring; Cherries, especially Morellos, are a heavy crop and good; Raspberries, Gooseberries, red, white, and black Currants are very plentiful, fine, and free from blight; of Walnuts we have none, but Filberts are good. I may add, that the gardens here lie high and dry, so that we escape to a certain extent the evils arising from late spring frosts.—**W. WILDSMITH.**

Sussex.—**Eridge Castle, Tunbridge Wells.**—Apples, plentiful; Pears, a good crop; Plums, half a crop; Apricots, a failure; Peaches and Nectarines, only good in places where they are sheltered; Gooseberries, good; Currants, excellent; Cherries most excellent; Figs, cut off by the late frost; Nuts, a good crop in sheltered places.—**J. RUST.**

SOUTH MIDLAND DIVISION.

Oxford.—**Great Tew, Enstone.**—Black Currants, a fair crop; red and white Currants, good; Gooseberries and Strawberries, good; Apricots, an inferior crop, as is also that of Peaches, Nectarines, and Plums; Cherries are a fair crop; Pears, about half a crop; Apples, very abundant; Walnuts are an inferior crop. In our orchard house there is again a very full crop, and I feel more and more satisfied that this is the surest way of securing fine crops of good fruit.—**A. MACFARLANE.**

Hertfordshire.—**Moorpark, Rickmansworth.**—The Apple crops hereabouts are good. Notwithstanding all the various modes of protecting Apricot and Peach blossom by means of netting and other contrivances, it may be said of Apricots that the crop is a failure. Peaches very few; and as to Nectarines some individual trees are well loaded with fruit. Plums are very thin, Damsons especially being a failure. Cherries have been an abundant crop, and small fruits have been extra good. I may add, that Potatoes are really good both in quantity and quality, and that no disease has been observed here as yet.—**D. CUNNINGHAM.**

Bedfordshire.—**Luton Hoo Park.**—Apples here are a fair crop; Apricots, an extremely light one; Currants, of all kinds, a very heavy crop; Filberts and Nuts, good; Gooseberries, a good crop, trees much injured by caterpillars; Mulberries, a heavy crop; Pears, good both on walls and on pyramids; Plums, a very poor crop on north-west walls, but a good crop on west walls, scarcely any on standards; Peaches, a good crop; Raspberries, very good; Strawberries, a remarkably heavy crop, very fine, and quality excellent; Walnuts, a light crop.—**R. BUDD.**

Northampton.—**Castle Ashby.**—Fruit crops here are, generally speaking, under average. Strawberries are plentiful, also Currants and Gooseberries; Apples are about half a crop; Pears, a few upon walls, none upon pyramids, standards, or other trained trees; Plums, very few; Raspberries are a medium crop, and much blighted; Cherries, none; Peaches and Nectarines, very few, they bloomed very weakly, and all dropped off; a circumstance which I attribute to the immaturity of the wood. Apricots are a small crop; the greater part of the bloom, when expanded, presented a singularly blank appearance inside, and was destitute of stamens or pistil, consequently it dropped off. Walnuts are a medium crop.—**GEO. BEECH.**

WEST MIDLAND DIVISION.

Staffordshire.—**Alton Towers, Cheadle.**—Gooseberries, Currants—red, white, and black—Strawberries, Raspberries, and Apples are here abundant; Pears are half a crop; Plums, average; Damsons are only about half a crop; Peaches on walls, excellent; Apricots, very thin; Filberts, half a crop; Cherries, abundant. Crops of all kinds of vegetables, excellent.—T. RABONE.

Herefordshire.—**Downton Castle.**—Of Strawberries I have an abundant crop; Currants—red, black, and white—are very good; Gooseberries and Raspberries are a fair crop, as are also Peaches and Nectarines; Cherries, both dessert and Morello, are good; Apples, too, are very good all over this part of Herefordshire; but Pears, Plums, and Apricots are but half a crop, having been destroyed by frost. All kinds of wall-fruit trees are making good wood, and seem to be in much better health than they were last summer.—Wm. LONDON.

Gloucestershire.—**Tortworth Court, Wotton-under-Edge.**—Peaches and Nectarines here are only about half a crop; Plums and Apricots are a complete failure; Apples, about half a crop; Pears, a fourth of a crop; of Gooseberries, Strawberries, red and black Currants, we have very heavy crops, more so than they have been for many years past; Raspberries are a full crop and large in size; Cherries on standard trees, a complete failure; on walls, a full crop; Nuts and Figs a failure. This has proved a backward season. During the day we have had very warm sunshine, followed by cold nights until within these last few weeks.—ALEXANDER CRAMBE.

Shropshire.—**Willey Hall, Broseley.**—Apricots, thin; Peaches and Nectarines, good; Apples, abundant; Pears, good; Cherries, plentiful; Strawberries, abundant and very fine; Gooseberries, good; Currants and Raspberries, very fine; Plums, good, even; Damsons are very good with me, but scarce as a rule; Filberts, a heavy crop; Walnuts, moderate.—W. H. WELCH.

Staffordshire.—**Keele Hall, Newcastle.**—North Staffordshire is not a favourable district for out-door fruits. This season we have fair crops of Apples, and of Peaches and Nectarines; Apricots, good, particularly so under glass; Cherries, good; Strawberries, first-rate and a good crop; all small fruits plentiful.—W. HILL.

Warwickshire.—**Packington Hall, Coventry.**—The following may be taken as a fair average of the fruit crop in this district. Apples, half a crop; in the early part of the season they looked as if they would be a large crop, but many trees are much blighted, a great portion of the fruit has fallen off, and what remains does not seem to swell kindly; Pears are very thin, indeed I never saw them so thin; Apricots mostly very thin, I have about half a crop; Peaches, thin; Nectarines better, but by no means good; Plums and Damsons hardly any; Gooseberries had their buds much picked out by birds early in spring; but for that and the frost there would have been a fair crop. Currants—red, white and black—are middling, frost having destroyed many that were exposed; Nuts and Filberts scarce; Strawberries and Raspberries plentiful and good; Cherries scarce.—J. G. TEMPLE.

Compton Verney.—Apples with us are abundant and fine; Pears, partial, half a crop; Plums, under average; Damsons, a few; Raspberries, abundant and good; Cherries, good on walls; Strawberries, very abundant and fine; Gooseberries, under average; Currants, plentiful and fine; Apricots, a failure; Peaches and Nectarines half a crop; Walnuts, average crop; Figs, good on walls.

Herefordshire.—**Shobden Court, Leominster.**—Apples, I am glad to say, are abundant here this year. This is not a Pear-growing district for Perry making, but, as far as I am concerned, I am not nearly as well off as I was last year, our Pear crop is very thin; Peaches and Nectarines are not a large crop; Apricots are thin; Strawberries have been very good; as have also been Currants and Raspberries; but the choice kinds of Gooseberries suffered from spring frost, and from that little pest, the bullfinch. I really think it is as necessary to net plantations of Gooseberries in winter and spring as it is now when they are ripe to net them from blackbirds. Bullfinches, though pretty enough to look at, are quite as troublesome with me in the matter of Plums and Apricots as in that of Gooseberries. The Potato disease has broken out strongly during the last week, but I have not yet seen any diseased tubers.—JOHN MATTHEWS.

Worcestershire.—**Witley Court, Stourport.**—Fruit crops in this neighbourhood, although somewhat partial, may, upon the whole, be pronounced to be satisfactory. Apricots are generally a light crop; the bloom was produced weakly and dropped, a mishap do doubt attributable to the long continuance of wet and absence of sunshine during last autumn having prevented the wood from becoming thoroughly ripened. Apples are a most abundant crop; Pears are very thin generally; Plums are scarce and partial; in one or two instances I have seen famous crops of Damsons, but they are by

no means general; Strawberries are most abundant, and of fine quality; Cherries are a full average crop. Of Peaches and Nectarines there are heavy crops, and the trees making fine clean growth. Figs are a full average crop, and swelling off well. Of small bush fruits, such as Currants, red and black, we have very heavy crops, and of fine quality; also of Gooseberries and Raspberries. Nuts and Walnuts are plentiful. I may remark that the season is quite a fortnight later than usual, and that growth of all kinds is remarkably vigorous. Potatoes promise to yield abundant crops, and I have seen but little disease so far.—G. WESTLAND.

SOUTH WESTERN DIVISION.

Dorsetshire.—**Sherborne Castle.**—Apples hereabouts are a very heavy crop; Apricots, scarce; Berberries, plentiful; Cherries, a fair crop; Currants, abundant; Figs, moderate; Gooseberries, plentiful; Medlars, scarce; Mulberries, plentiful; Filberts and other Nuts, very few; Peaches and Nectarines, a poor crop; Pears on walls, a moderate crop, on bush trees, very few and poor; Plums are but a middling crop; Raspberries, the heaviest crop I have known; Strawberries, abundant; Walnuts, scarce.—W. G. PRAGNELL.

Somersetshire.—**Nettlecombe, Taunton.**—The fruit crop in this district is, as near as I can learn, as follows:—Apples, below the average; Pears, below half an average; Peaches, Nectarines, and Apricots, very few, and in some places none, but the trees are looking well; Plums, almost a failure; Cherries, about half a crop; Strawberries, a good crop, and fine in quality; Figs, abundant and good; bush fruits of all kinds, good; Medlars, an average crop; Walnuts, abundant; Filberts and Kent Cobs, scarce.—CHARLES ELWORTHY.

Ashton Court, Bristol.—Peaches, Nectarines, Plums, Apricots, and Figs on walls, are here failures. All bush fruits are abundant, and fine in quality. Pears on some of the pyramids are a fair crop. Apples, I should say, are a fine crop, and Strawberries I never had so fine, or in such abundance. Many of the President kind weighed close upon 1½ ounces each. Cherries on espaliers, such as May Duke, Circassian, and Morello, are good and abundant.—W. DODDS.

Cornwall.—**Enys, Penryn.**—The Apple crop here is good, autumn kinds and kitchen sorts being abundant in most places; of Pears there is an average crop; Plums are plentiful in Plum gardens; of dessert kinds there is not a good crop, only a sprinkling; of Peaches and Nectarines there are various reports; here we have good crops, thousands having been thinned out, while not far off there is barely an average crop, a circumstance attributable, in a great measure, to the degree of shelter which the trees received while in bloom. There are good crops of Cherries of all kinds; of small fruit, such as Gooseberries, Raspberries, Currants, &c., there is a good supply; Strawberries were a plentiful crop, but soon over; Nuts, as far as I have seen, are under the average; there are good crops of brown Turkey Figs against walls having a south or south-east aspect. Potato tops are going off badly; they have grown well this season, and the tubers are good; but what quantity of the late kinds the disease will leave unhurt is yet to be learned.—HENRY MILLS.

Wiltshire.—**Wilton House, Salisbury.**—Apples here are abundant, but blighted; Apricots, a fair crop; Cherries, good; Currants, very abundant; Figs, a fair crop; Gooseberries, moderate, trees much injured by caterpillars; Nectarines, a fair crop; Nuts, abundant; Peaches, a fair crop; Pears, moderate; Plums, a fair crop; Raspberries and Strawberries, very abundant; Walnuts, a light crop.—THOMAS CHALLIS.

MIDLAND DIVISION.

Lancashire.—**Croxeth Park, Liverpool.**—Our fruit crop this season is much more satisfactory than it was last year. Apples, Pears, and Peaches are a fair crop; Plums, scanty; Cherries and all sorts of small fruits are a heavy crop, and of good quality.—JOHN BISSET.

Lincolnshire.—**Aswarby Park, Folkingham.**—Apples here are a full crop; Apricots, a failure; black Currants, a full crop, but the fruit is small; early Cherries, a failure; Figs, a full crop, although the trees here are never protected in winter; Gooseberries, a heavy crop, and the fruit large and well flavoured; Morello Cherries, a fair crop; Pears, nearly a failure; Plums, none; Peaches and Nectarines, very few; Nectarines, under glass, a heavy crop and fine in flavour; red Currants, a full crop, and large and fine in quality; Raspberries, a full crop, but the fruit is small; Strawberries, a heavy crop, and fruit large and fine in quality; Walnuts, an extra heavy crop; Mulberries, a fair crop.—RICHARD NISBET.

Derbyshire.—**Osmaston Manor.**—Of Apricots we have only half a crop; Cherries, good on walls, but light on standards; Plums, a very light crop here, also Damsons; Pears, a very light crop; Apples, very good crop; Raspberries and Strawberries of all sorts,

very heavy crop; black and red Currants and Gooseberries, very good crops; Peaches and Nectarines are not grown out of doors in this district.—JOHN BOOTH.

Derbyshire.—Chatsworth, Chesterfield.—Apples and Pears here are very fine, as are also Gooseberries. Apricots, Plums, Peaches, and Nectarines, none. Cherries good, both early and late, including Morellos. Currants, Strawberries, and Raspberries, splendid crops. Filberts none. Our fruit crop was destroyed on May 19 and 20, when we had 12 degrees of frost.—THOS. SPEED.

Rutland.—Exton Park.—Apples and Pears are with me about half a crop. Plums, very few. Peaches, Apricots, and Nectarines, scarce. Filberts and Walnuts, good. Strawberries, good and very large. Black Red and White Currants, and Cherries, a splendid crop. Figs moderate.—JAMES SMITH.

Leicestershire.—Cole Orton Hall, Ashby-de-la-Zouch.—Of Apricots we have very few indeed—a failure; Apples, partial, about half a crop on the average; Cherries, a fair average crop; Filberts, a good crop; Walnuts, very few; Gooseberries, thin, owing to spring frosts; Pears, rather partial, some sorts very good, other very few, not so good as last year; Plums, a very abundant crop; Peaches and Nectarines, both most abundant, and required much thinning; Figs, a fair crop; Raspberries and all sorts of Currants, a very heavy crop, and fine in quality; Strawberries, a very great crop, and excellent in every way—never better.—M. HENDERSON.

Nottinghamshire.—Welbeck Abbey, Worksop.—Apples and Pears, in orchards, are about an average crop, some trees being very full of fruit, and others, according to the varieties, only partially so. Pear trees on walls are, in general, well covered with fruit, especially Marie Louise, Louise Bonne, Bœurré de Capiaumont, and Winter Nelis. Plums are a general failure, both on walls and on standards. Small bush fruits, such as Gooseberries, Currants, and Raspberries, have been an excellent crop, especially Raspberries. The Gooseberry caterpillar has been more prevalent on the bushes this year than usual, and nothing but repeated doses of Hellebore powder has kept it from devouring every leaf. I never recollect gathering such a large crop of Strawberries as I have done this year, and they have been fine in size and flavour, the best being President, Lucas, Sir J. Paxton, Sir Charles Napier, Coxcomb, British Queen, and Dr. Hogg. Apricots have again failed where not well protected; the best kind for the last two years with me has been the Kaisha, which this year bears a full crop. The Moorpark and other sorts had the same protection in spring—under glass lights—but they only show half a crop. Some trees of the Kaisha, not protected by glass lights, have a good crop on them, showing that this variety is hardier in bad springs than the Moorpark and others.—WILLIAM TILLERY.

Berry Hill, Mansfield.—Apples with us are a light crop; Apricots, moderate; Pears, a very thin crop; Peaches, good, but very late; Plums, a failure; Cherries, good, especially Morello's; Strawberries, a very heavy crop and good in size; Gooseberries, Currants, and Raspberries, abundant and fine.—S. A. WOODS.

Lincolnshire.—Sudbrooke Holme.—In this district Apples are about half a crop; Pears, scarce, except on walls where they are a full crop; Plums, half a crop, on walls a full crop; Cherries, tolerably abundant; Apricots, scarce; Peaches and Nectarines, full crops. All wall fruits a great crop.—GEORGE MCBEY.

Bloxholm Hall, Sleaford.—This has been one of the most ungenial seasons I ever knew, and fruit prospects are very poor in this district. We had a great deal of rain last autumn, winter, and early spring, then came cold dry weather with frosty nights, which continued till the second week in June, and although we had an abundance of bloom, owing to the wood not being ripened last autumn the bloom was weak and fell off. Apricots are a fair crop where properly protected, where unprotected a failure. Apples are a poor crop in most cases; in some sheltered parts a fair crop. There was an abundance of bloom, but it was weak. Cherries are a very poor crop; Pears on walls and espaliers are a fair crop, few on standards; Peaches on open wall are a poor crop; under glass fair; Plums on walls a fair crop, on bushes and standards few; Figs on open walls a fair crop, under glass good; Walnuts an abundant crop, more so than I have seen for several years. Gooseberries are a fair crop, though the buds were very much destroyed by small birds in early spring; Currants—red, black, and white—are fair crops.—DAVID LUMSDEN.

EASTERN DIVISION.

Suffolk.—Culford Hall, Bury St. Edmonds.—Apples in this district are a very fair crop; Apricots, on the other hand, are an entire failure; Cherries, more particularly as regards the Morello variety, are exceedingly abundant; Figs on open walls promise at present to be plentiful, but many fruits may yet drop off prematurely;

Peaches and Nectarines on walls and in orchard houses are a fair crop; Pears are a fair but, if anything, a light crop; Plums are about half a crop—Damsons especially being very deficient; Walnuts are about half a crop, and other Nuts much the same; Gooseberries exceedingly abundant and good; black Currants are very plentiful, and finer than usual—red and white Currants much the same; Raspberries are abundant and very fine; Strawberries have been unusually plentiful, and exceedingly fine and well flavoured.—P. GRIEVE.

Woolverstone Park, Ipswich.—The late frosts made sad havoc with Plums and Peaches in this district; Cherries were late in bloom, and escaped with only a slight thinning; the fruit has been unusually large and fine. On Peaches there was plenty of bloom, but a large per centage was deformed and lacked the necessary vigour for a successful set. Numbers of blooms did not expand at all, and many that did so had totally barren anthers. It is singular that Nectarines having the same aspect should have formed an exception and set a full crop, as many have done here on south-east walls. The young buds of Peaches and Nectarines suffered a good deal from the low temperature, and were much blistered; but the trees have since made satisfactory progress, and are now looking well. Apricots under coping and otherwise protected have set fair crops of fruit, which promises to be of unusually fine quality. Pears are partial, both on walls and pyramids; some kinds, such as Passe Colmar, Louise Bonne, Glou Morceau, and one or two others have set full crops, while many others are thin, and have frost-bitten and deformed fruit. Plums set well, but the frost made nearly a clean sweep, leaving what few remained crippled and deformed. Apples are a fair crop where sheltered, but thin in exposed situations. Gooseberries, Raspberries, Strawberries, and Currants have been most abundant and fine in quality.—JAMES SHEPPARD.

Norfolk.—Cossey Park Gardens, Norwich.—Wall fruit in general is scarce in this quarter; Apricots and Peaches, a bad crop; Nectarines are a little better; Plums, few or none; Cherries, scarce; Figs a fair crop; Pears, a good sprinkling, especially on wall trees; Apples in some instances abundant, but in general the crop is bad; Currants, plentiful; Gooseberries, not over abundant; Raspberries and Strawberries plentiful, as are also Walnuts and Filberts.—J. WIGHTON.

Essex.—Audley End, Saffron Walden.—Peaches, Nectarines, and Apricots with me are a very light crop; Pears on walls middling, but on standards scarce; Apples, about a quarter of a crop; Gooseberries, and Currants—red, white and black—abundant, as are also Strawberries and Raspberries; Plums, few; Cherries, good, especially Morellos; Figs, good; Filberts and Cob Nuts, very good.—GEO. YOUNG.

NORTHERN DIVISION.

Yorkshire.—Thorpe Perrow, Bedale.—Apples hereabouts are good in sheltered places, in others much cut up with blight; Apricots are a bad crop, generally; but in some instances, where the trees are growing against a cottage with a good coping, they are good. Bush fruit is abundant and fine; Peaches, good, but very late; Nectarines, not much grown out of doors here; Pears, a moderate crop; Cherries, good in the gardens here, but not much grown in this district; Plums, good in some places, especially the Victoria, in others bad, the fruit-buds were all killed in February; Strawberries, abundant and fine; Walnuts, a bad crop; Filberts, not good.—WILLIAM CULVERWELL.

Durham.—Lambton Castle, Fence Houses.—Apricots hereabouts are a light crop; Apples, moderate; Pears, an average crop; Plums, good; Strawberries, abundant and fine; Cherries, thin; Peaches, thin outside, fine inside; Nectarines, thin; Figs, thin outside, good inside; Gooseberries, thin; other small fruits plentiful.—J. HUNTER.

Southend Gardens, Darlington.—Few springs have been more tantalising than the last, and even now we are suffering from its effects. Gooseberries, in many places, are a failure; Currants are a fair crop, and where they have escaped the fly the fruit is good; Apricots looked well at one time, but very many have dropped off, and now they cannot be said to be more than half a crop; Cherries are so scarce that it is a matter of surprise to find, in looking over the trees, a few ripe fruit. Plums, where unprotected, are entirely gone; Pears have suffered very much, still there will be a small gathering, although it is not uncommon to meet tree after tree without fruit; Apples are a fair crop, and with the fine summer weather which we are now experiencing we may expect good well-ripened fruit; out-door Peaches and Nectarines are a failure in this county. I have not tasted a presentable Peach, nor can I say that I have seen a thoroughly ripe Nectarine grown outside, but under a glass cover there are full crops, and fruit of a quality unequalled even in the southern counties.—JOHN RICHARDSON.

THE INDOOR GARDEN.

BEGONIA CHELSONI.

SINCE the introduction of *B. boliviensis*, numerous beautiful varieties of *Begonia* have been obtained by means of hybridisation. *B. Sedeni* was one of the first obtained by crossing *B. boliviensis* with an unnamed species of that group, and we have now at least a dozen varieties in our collections all somewhat different from one another. Of these, the kind now illustrated, raised by Messrs. Veitch, is one of the best. It is of stout upright growth, and flowers freely from April

or May until November. The flowers are of good size and substance, and of a glowing red or vermilion colour, which contrasts well with the bright green elegantly-cut foliage and pale greenish stems. It is easily propagated either by means of cuttings or division, and it grows freely in a fresh open compost of fibrous loam, peat, and coarse white sand. It thrives best in a stove or intermediate house, and when inactive growth requires a plentiful supply of moisture.

B.

WINTER MIGNONETTE

EVERYBODY likes to have *Mignonette* through the winter months, and yet but few have it in bloom at that season. Some nurse it to death, others grow it in a temperature much too high for it, and some run to the other extreme, and starve it. Now to achieve complete success, *Mignonette* should be sown three times, say in the middle of July, the middle of August, and the first week in September. The pots must be what are called 4-inch ones, and be quite clean. Drain them thoroughly with broken bones, fill them with a compost of fresh turfy loam, and one-third rotten dung well incorporated, and if it is dry make the whole quite firm. At the time of sowing, cover the seed with sandy loam, give a good soaking of water, and shade the pots until the plants come up. The pots should be placed in a pit or frame, not that it is necessary that they be covered with glass at all times, but in order that in the event of heavy rain or boisterous storms, they may be protected. Directly the plants are of sufficient size to handle

them, thin out, retaining not more than five of the strongest in each pot, and should these be at all spindly or weak, earth them with a little dry soil, and water around the sides of the pot. There is nothing that *Mignonette* is so impatient of as stagnant moisture around the collar of the plant, and hence it is important that the drainage be effective, and the pots after the end of August be not exposed to heavy rains, and from the end of September until February, not a drop of moisture should fall upon the plants. Give what water may be necessary at the roots; but later in the season do it so that the plants may be dry before the frame is shut up for the night.

The plants first sown will be fit if properly managed, to take a shift into 6-inch pots in the end of August, the second lot may be re-potted at the end of September; but the plants last raised will not require larger pots than those they are sown in until February. By the end of September the first raised plants should be strong and healthy; but unless they are wanted it will be wise to remove the flower spikes directly they can be handled, a practice that will add materially to the size of the plant, and one that will strengthen the bloom for the winter. Now through the winter the following rules must be observed in the management of *Mignonette*:—First, the place for the blooming plants must be cool and close to the glass; plenty of air must be given, but the plants must not be exposed to cold cutting draughts, or the foliage will soon turn sickly. Secondly, water must be carefully used, giving

sufficient, but not making the plants sodden; and thirdly, the temperature of the house should not exceed, by fire heat from 40° to 45°. Succession plants are best kept in pits or frames. Plunge the pots in cinder ashes, water cautiously, and give all the air possible without exposing the plants to rain. On mild days the sashes may be taken entirely off with decided advantage. Protect from frost on cold nights, and your success in growing *Mignonette* will be complete. If the last sown batch receives a shift in February, the result will be very large specimens. A good pot of *Mignonette* in the spring should be 2 feet to 30 inches high, and a bush quite as much in diameter.



Begonia Chelsoni.

ORCHIDS IN FLOWER AT KEW.

A PLANT of *Oncidium janciriense* (syn. *O. longipes*) is at present in blossom here. It is a dwarf form, having slender one-leaved pseudo-bulbs, fresh green foliage, and flower-spikes 9 or 10 inches long, bearing from five to seven flowers. The latter measure about an inch across, the sepals and petals being yellow barred and blotched with brown. The lip is three-lobed and of a golden-yellow colour. It is a very effective species, and flowers very freely. *Rodriguezia planifolia* may also be found here, bearing dense nodding spikes of pale yellow flowers. Its pseudo-bulbs are two-leaved, and the plant appears to flower very freely. *Odontoglossum Schleiperianum*, a pale summer-flowering variety of *O. grande*, is likewise now in flower in this establishment, and is very effective; as is also *Dendrobium McCarthyæ*—the May flower of Ceylon—when well grown this is a rare and showy *Dendrobe*. Two or three plants of *Phalenopsis* (rosea) *equestris*, are producing small rosy-lilac flowers on deep purple flower-stems. This is a pretty little *Phalenopsis*; though not so effective as its larger-flowered congeners, still it is a perpetual bloomer, often remaining in flower for nine or ten months together. A *Stanhopea*, closely resembling *S. tigrina*, is bearing five or six great wax-like crimson-blotched flowers. These are very effective for the time being, but very fugacious, lasting, as they do, only a day or two at most. *Odontoglossum Rossii* is a pretty dwarf species, bearing from one to three showy lilac flowers blotched with purple, on stems 2 or 3 inches high. This is a very variable species, and grows and flowers freely in a cool house like the rest of the group. A nice little plant of *Dendrobium crystallinum* has been in flower at Kew for several weeks. In appearance it resembles a slender growing plant of *D. Bensoniæ*, and bears white flowers with purple-tipped segments, and the disc of the lip is of a bright orange colour. It is an effective species, something in the way of *D. (Bullerianum) gratiosissimum*.

F. W. B.

Trumpet-flowered Dendrobe (*Dendrobium litiiflorum*).—A small flowered form of this is quoted in the "Botanical Magazine" for the current month. Its flowers are scarcely more than half the size of those usually borne by *D. litiiflorum*; but they are much more highly coloured, the sepals and petals being of a deep purple-lilac, the lips white, heavily blotched on the disk with velvety crimson-purple, tipped at its apex with rosy-lilac. The usual form of this species has white flowers, the segments being tipped with lilac-purple, and the lip blotched with purple. A capital figure of this *Dendrobe* will be found in "Warner's Select Orchidaceous Plants," second-series, pl. iii. It has slender pseudo-bulbs, 1 to 2 feet in length, bearing bright green foliage from 3 to 5 inches long and half an inch broad. Its habit is identical with that of *D. trans-parens*, and the flowers can scarcely be distinguished from those of *D. nobile* when cut from the plant. The plant figured in the "Botanical Magazine," as above, is certainly worth adding to collections that already possess the lighter flowered forms. It has been called *D. Hanburyanum* by Prof. Reichenbach, though the name must give way to that of Lindley, given some time before.—F. W. B.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Herbaceous Begonias.—In addition to those noticed last week (p. 86) as being in the Wellington Nurseries, the following two in the same nursery struck me as being particularly fine, viz., *Vivicans* with large brilliant scarlet flowers, and Professor Thistleton Dyer an exceedingly handsome sort, with Fuchsia-like flowers of a bright scarlet colour.—W.

Batatas paniculatus.—This somewhat resembles *Ipomœa Horsfalliæ* in general appearance, as well as in flower, but is much larger, and more effective as a tropical stove climber when well grown. Its purplish stems ramble from 20 to 30 feet in length and bear large palmate leaves and rosy-purple Convolvulus-like flowers. It has been grown at Kew for years, trained round the palisades of the tank in the old Victoria House. It grows rapidly in a hot humid atmosphere and may be liberally supplied with liquid manure, as it is a good feeder and attains a large size.—B.

Yellow-fruited Capsicums.—These are certainly worth cultivating for purposes of decoration alone. The seed should be sown early in spring, and if the young plants are grown on in a moderate heat in either a pit or frame, they will fruit ten weeks after sowing, and will have a very effective appearance, especially when grouped with the scarlet-fruited varieties. When grown close to the glass in a gentle heat and allowed plenty of air, they form dwarf shrubby plants a foot to 18 inches high, each bearing from twenty to fifty curiously contorted shining bright yellow fruits, each as large as a pigeon's egg, and which last in beauty for months.

Agapetes buxifolia.—This is, perhaps, one of the most neglected of pot plants; indeed, with the exception of the plant I have myself, I do not know where there is another specimen of it. It is a little small-leaved hard-wooded shrub, which annually produces a profusion of pretty tubular crimson flowers in May and June. I bestow no special care whatever on it, it is now growing in a 6-inch pot, in a compost of good yellow loam, mixed with peat and leaf-soil, and it is kept throughout the whole year on a front stage in a light and airy greenhouse, where it yearly repays me with an abundance of bloom.—A. ANDREWS, *Valleyfield*.

THE FLOWER GARDEN.

LILIES PAST AND PRESENT.

(SECOND EARLY KINDS).

I WAS unavoidably prevented from giving you my list two weeks ago, but the following will represent such Lilies as have bloomed with me since writing my last paper till the end of July:—

47. *Lilium Martagon Dalmaticum*.—This fine species resembles *Martagon Catani* in the rich glittering crimson plum-colour of its flowers; but with me was more dwarf, and the flower-buds before opening were more cottony. I mention this as it is stated by some that they are one and the same variety.

48. *L. Martagon flore pleno*.—Colour rose-purple; flowers perfectly double, with from four to five rows of petals; a very curious variety.

49. *L. canadense*, var. *californicum*.—Rich crimson; lower half of petals and centre of flower yellow, ranging to orange, freely covered with large brown spots; very handsome and valuable for *Rhododendron* beds.

50. *L. pumilum*.—Orange-scarlet; petals rolled back, differing from *tenuifolium* both in colour and in time of blooming, but equally slender in growth.

51. *L. carolinianum Michauxi* (a sub-species of *superbum*).—Crimson-scarlet; lower half of petals rich deep yellow, freely spotted with brown to the centre of the flower; a fine North American species, but neither so tall nor so profuse-flowering as *superbum*.

52. *L. excelsum* (syn. *testaceum* and *Isabellinum*).—Apricot colour, with faint orange-red spots and orange anthers. Of all the Lilies this is the most agreeably fragrant, and, as it is a tall grower it is admirably adapted for planting amidst *Rhododendrons*. The delicate fragrance of the flowers makes them also very desirable for the conservatory and to cut for vases.

53. *L. candidum flore pleno*.—This is simply a monotropy and of no decorative value, as I have never seen it flower well, though I have been told that in some parts of the country the effect of its loose florets is very striking. There is no doubt that soil and situation have a great deal to do with the successful culture of many of the Lilies.

54. New species, allied to *Washingtonianum*.—This has not yet been well flowered in this country. I have seen several specimens, and they differ from each other, but none of them could be called handsome; and the same remark may be made about *Washingtonianum*. None of the flowers which have been exhibited in this country come up to the descriptions given of the Lily as seen in the Rocky Mountains. The reason assigned is that they require two or three years to establish themselves. The flower I noted was white, with small crimson spots, erect and very fragrant.

55. *L. longiflorum*.—From the first day I took an interest in Lilies up to the present hour the varieties of *longiflorum* have puzzled me. I will not, therefore, commit myself to a minute description of them. I have carefully studied Duchartre's paper, and a mass of other matter besides, in presence of the Lilies themselves, and I have failed to catch up the points which Duchartre and the other writers have so carefully pointed out. I have taken into my council professional and non-professional friends, with a pitful of the Lilies ranged before us, and with the same results. Whether it is my defective vision or want of comprehension I know not; but I have applied the footrule and also my nasal organ to the flowers, and I can get neither the length nor the distinctive fragrance as noted. Can any of your readers help me? *Longiflorum* proper should be the shortest-flowered variety; but, most unaccountably, it sometimes comes out the longest; and *Eximium*, which should be the longest, sometimes comes out the shortest. Van Houtte describes *Eximium* as twice as large as *longiflorum*. This not having been my experience, I sent to Van Houtte for roots, and I can see no difference between the flowers from his roots and those of *longiflorum* obtained from other sources. Liu Kiu is another variety wherein the same difficulty occurs. Sometimes I fancy the flowers are larger, and then I imagine it is only fancy.

Liu Kiu praeceox, from its price, ought to be distinct; but no! instead of coming in earlier than Liu Kiu, it has come out a day or two later. I must, therefore, leave the foregoing varieties of longiflorum to have their distinctive characters pointed out by some one else, or at some future time by myself, if I can ever arrive at the desired knowledge.

56. *L. longiflorum* Liu Kiu fol. variegatis.—This differs from the foregoing in having, during its early stage of growth, a creamy-white-margined foliage.

57. *L. longiflorum*, fol. variegatis is perfectly distinct, having a greyish-green foliage, margined with clear silver-white; flowers, pure white. It is a rarity, but a somewhat delicate grower.

58. *L. longiflorum* Takesimæ.—This variety is always distinguishable from the stem being tinted with purple more or less, and frequently the flower-bud is quite purplish, fading off as the flower expands till there is but a tinge of the purple seen in the pure white. But this coloration in the flower is not constant. I have only noticed a per centage so distinguished.

59. *L. Thunbergianum* marmoratum grandiflorum.—A fine variety, with larger rich crimson-scarlet flowers, shading down to golden yellow, and marked more or less with tawny yellow; sparsely spotted.

60. *L. Thunbergianum* formosum.—Soft scarlet, mottled with tawny yellow, and sparingly spotted.

61. *L. Thunbergianum* cruentum.—Rich crimson, mottled with tawny yellow; lower half of petals spotted with black.

62. *L. Thunbergianum* vitellinum macranthum.—Rosy-scarlet, mottled with apricot; lower-half of petals freely spotted.

63. *L. Thunbergianum* punctatissimum.—Deep tawny crimson, flaked with apricot and freely spotted.

64. *L. Thunbergianum* venustum.—Rich glowing soft orange. My quarter of this is charming.

65. *L. Humboldtii*.—Clear rich golden yellow, freely spotted with rich red-brown spots; these plants vary in size and number on different flowers. This species is reputed to hold its flowers longer than any other of the North American Lilies. The petals are of great substance, and the plant, when it once gets established, will grow from 6 to 10 feet high, and its immense head of flower will be magnificent, and for Rhododendron beds will surpass all others. Its leaves are arranged in whorls like those of the well-known Martagon, and at one stage of its growth it might be taken for a Martagon pure and simple.

66. *L. superbum*.—This species has long been known in this country, and till the introduction of Lilies lately from California was almost the only representative of American Lilies in our gardens. The Dutchmen have raised it from seed in large quantities, and thus perpetuated it and secured a good supply at a cheap rate. In diversity, size of flower, marking, &c., there is as great a variety as in the auratum. In my quarter, which is now commencing to flower, the colours range from intense blood-crimson to light orange-scarlet, and with the brown spots freely interspersed on a clear yellow ground; while others have all orange-yellow ground; some have the spots smaller and others larger; some produce an immense quantity of flowers, and some few. *L. superbum* pyramidale produces the largest number of flowers. For Rhododendron beds this species should be extensively used, being moderate in price and to be had in quantity. When established in peat for two or three years it attains gigantic proportions, so much so, that established beds which have been seen in some of the continental and English nurseries have been described in terms which have appeared, to the uninitiated, as an exaggeration.

67. *L. Chalcedonicum*.—This species is well known, having been in cultivation from a very early period. Like some other Lilies, it dislikes being disturbed, and seldom flowers the first year after it is transplanted, and if it does flower the bloom is inferior. There is no Lily that I know which produces flowers so intense in colour. Some of the flowers are spotted conspicuously, and others very faintly. I have just received by post a form of *L. Chalcedonicum* I had never before met with. It attains a height of $3\frac{1}{2}$ feet or more, and the flowers are produced in a coronet; the specimen received had seven flowers. I should be glad if some of your

readers who may have seen this grand variety will let me know something of its history.

All the Lilies enumerated in the foregoing article are valuable for the decoration of the conservatory, as also for the flower garden.

PETER BARR.

12, King Street, Covent Garden.

THE ROSE OF JERICHO.

(ANASTATICA HIEROCHUNTINA.)

THIS singular plant, it is scarcely necessary to say, has nothing to do with the Rose family, but is an annual crucifer, which grows on barren wastes from Syria to Algeria. It is by no means beautiful, and might have remained long unnoticed were it not for its curious hygroscopic properties; when growing, its branches spread out horizontally, but as soon as the seeds commence to ripen they curl inwards, until the whole plant resembles a ball of wicker-work, which, on being set free from the sandy earth in which it grows, gets blown about by the winds, and in this way its seeds become distri-



The Rose of Jericho.

buted over a wide area. If the dried plant be placed in water the branches again expand, and the seed pods burst longitudinally. The same plant, indeed, often retains its power of expanding and contracting, according to the circumstances in which it is placed, for years after it has been gathered. This plant is known in the Holy Land as "Kaf Maryan," or the Virgin's flower, and several unlikely traditions are there related to European travellers respecting it.

The accompanying illustration shows the plant when partially closed. Dried specimens of it are sometimes sold in the streets of London and elsewhere as a curiosity. F. W. B.

Collinsias for Spring Flowering.—The seed of the beautiful *Collinsia verna* has hitherto been found by some to be difficult to germinate. I got some of it the other day from the introducer, Mr. W. Thompson, of Ipswich. He also kindly favoured me with the following remarks respecting the best time for sowing, which it were a pity should remain unpublished. He says:—"As to the time for sowing, I would say any time during the second part of the month of August. The only secret in getting it up is to sow in a box, which place, if convenient, under a wall having a north aspect, and keep the seed well damped. Any fresh seed will grow if treated in this way; but, if kept till spring, it is of no use. With me it always comes up self-sown; but, unless the autumn is wet, or the bed kept well watered, the seedlings are too late to make good plants. Hence I always sow specially as now directed. I shall be much surprised if you find any difficulty in getting your seed to grow if my advice is followed. I would also advise you to sow some of the *Collinsia violacea* in autumn, as I believe you cannot get it in perfection if only sown in the spring. It is the prettiest *Collinsia* grown; but it blooms ten days later than *verna*." I have already grown *C. violacea* as a summer annual, and found it very pretty, the flowers being white and pale blue. *Heterophylla*, another of Mr. Thompson's introductions, is a strong-growing hardy kind; but the colour is

heavy, and in my belief not so effective as the old bicolor. I quite agree with Mr. Thompson as to the fact that, not only in the matter of *Collinsias*, but also in reference to most hardy annuals, if we would see them in full vigour and development of growth, they should be sown in the autumn for spring blooming. The best plan for most kinds is to sow about the last week in August.—A. D.

The Spotted Calla.—Richardia albo-maculata.—In your issue of the 26th ult., attention is directed to the suitability of this plant for sub-tropical arrangements. Although we have not used it *en masse* in the flower garden here during the last three winters, we have had several plants of it planted out in mixed borders, and they have survived our winters safely, without the slightest protection, in a cold retentive soil, pushing up early in May, and being at the present time in full flower. Its arrow-head shaped leaves are of a lively green, and distinctly marked with transparent oblong blotches of clear white, which are very effective and remarkable, even in the absence of the white flower-spikes, which are produced freely. It is one of those plants which cannot fail to please, and, when better known, will be extensively used, both for pot culture and for bedding out. It is a native of Natal, and I am fully persuaded, from my own experience with it, that it will, with the slightest covering of dry ashes or spent tan over and around the roots, withstand our winters in the open air. I may remark that, whatever covering is used, it should not be deep, and should be removed early.—GEO. WESTLAND.

Erinus alpinus as a Bedding Plant.—Some years ago a friend of mine brought the seeds of this little plant from Paris. The quantity was small, and it was sown thinly on the garden wall, but in the course of a couple of seasons from sowing itself freely, it has become quite luxuriant. It flowers here about the end of April, and becomes a regular sheet of rosy purple throughout May and June. I was under the impression, until the past wet season, that I would not be able to succeed with it on a flat surface, but the idea struck me of introducing a lot of gritty substance, such as old mortar into the beds, so as to elevate them. The consequence has been that I have had a couple of small panel beds quite a treat to look on, and thus situated the plants become much larger in bloom than they do on walls, and so uncommon was their appearance that none of my visitors could tell me what they were. Next season I intend to use this *Erinus* on mounds, edged with white sand-stone, and dotted with the New Golden Variegated Thyme, and *Arabis lucida variegata*. When out of bloom, from the very dark green of the *Erinus*, and the beautiful golden hues of the yellow-leaved plants, I fancy a pretty bed or mound all the year round may be secured. Can any of your readers suggest a better arrangement without the use of succulents? Some of the tufts so planted are now 9 inches in diameter. Since writing the above, I find the *Erinus* noticed in Robinson's "Hardy Flowers" as being one of the very best plants to be had for rockwork, ruins, garden walls, &c.—WM. HARTLAND, *Blackrock, Cork*.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Lilium auratum in London.—A correspondent writes to us that he has growing in a small garden at the back of his cottage at Camberwell, one of the above beautiful Lilies 3 feet 7 inches in height, having four large blossoms upon one stem. The bulb was planted in April last and protected only from the north-east winds by a wooden paling. He has also another one having five large buds. This was planted about 3 years ago, and flowers every year.

Potentilla Vase d'Or.—To the new and improved double-flowered varieties of *Potentilla*, a foremost rank among herbaceous plants must be assigned. Conspicuous amongst the kinds now in flower in the Wellington Nurseries is *Vase d'Or*, a kind which has double yellow flowers about 1½ inch or 2 inches in diameter, and which are produced in great abundance; indeed, the flowers are more like those of the yellow Persian Rose, than the blooms of a *Potentilla*.—A.

Indigofera australis.—I have a plant under this name growing against a wall with a western aspect, where it succeeds admirably, and produces annually an abundance of drooping little shoots well covered with foliage that I permit to hang down loosely during summer, on account of their drooping beauty. It also bears racemes of rosy-purple flowers in profusion, and springing as they do from the axils of all the leaves, they have an exceedingly pleasing appearance.—J. SOMERVILLE, *Lansdowne Villas, near Bath*.

Two good beds on a Lawn.—First: a circle 12 feet in diameter; centre, *Acer Negundo* variegatum, about 5 feet high, with *Clematis Jackmanni* flowering through it; groundwork of shrubs, such as the common Aucuba, Japanese Privet, Simmond's Cotonaster, Escallonia macrantha, with white Lilies planted between them; edging, crimson and pink monthly Roses alternately, extreme edging being little clumps of Pansies, Daisies, &c. Second: An oval; centre, *Acer Negundo* variegatum; groundwork, a large clump of *Lilium auratum* mixed with *Delphinium formosum*; edgings, *Yucca recurva*, mixed with choice Roses of different sorts on their own roots; extreme edgings outside, clumps of mixed single Anemones.—J. H. W. T., *Belmont, Curlew, Ireland*.

Adiantum Hendersoni.—At page 61 of THE GARDEN it is stated that this *Adiantum* was introduced by the Messrs. Veitch & Sons, but we have to inform you that the stock of this fine species is now in our hands, and from us Messrs. Veitch & Sons purchased it.—E. G. HENDERSON & SON, *The Wellington Nurseries, St. John's Wood*.

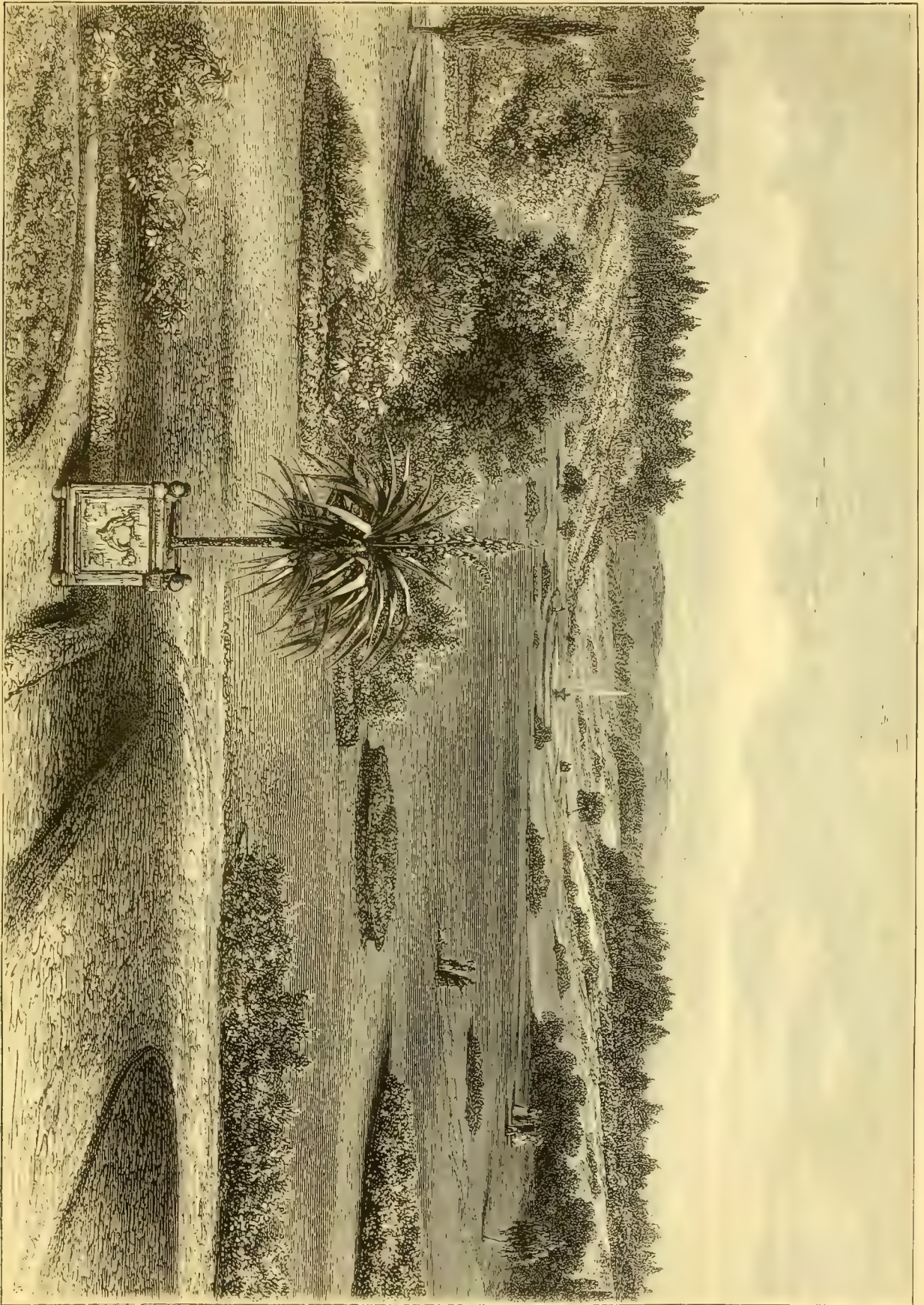
HEATHERSIDE.

ON the high table-land formed by the hills above Bagshot and Farnham are deserts, nearly as barren as the Great Sahara. It is true that they are not composed of the moveable sands which utterly preclude the growth of almost any kind of vegetation, yet they are so sterile that nothing but a scanty herbage of Ling and stunted Scotch Firs, which, but for summer fires, would soon form dwarf forests, will grow in that seemingly worthless and barren soil. It is composed of rough brown sand, with a topping of loose stony gravel and flint, the last relics of primeval chalk, with occasionally green sand and other unpromising substances. At from 2 to 4 feet below these surface soils (if soils they can be called) is a hard and compact stratum, from 4 to 8 inches thick, of red earth, nearly as hard as stone, known in the district as "the rust." Through this solid crust water cannot permeate, and it consequently passes away at every slope, leaving the sand and gravel above dry and parched, often to the state of dust. An analogous formation prevails also in the Ascot moors, where a similar crust renders them equally barren, and is there known as the "pan."

Many have pronounced these regions not only unworthy of, but impossible of cultivation, and, among them, a man of great and almost universal accomplishments, the Rev. Canon Kingsley. In his earnest and benevolent wish to see London and its millions furnished with a better and more copious supply of water he cast an anxious glance towards these barren hills of Surrey. Let us see what he says in his interesting essay* on the subject. "The upper regions of this district, spread out in vast flats, clothed with scanty brown Heather," he tells us, "are utterly uncultivable from their barrenness." He then proceeds to remark that travellers by the Southampton Railway must often be surprised at finding themselves, within an hour's run of London itself, "whirling through miles of desert;" urging that, although such travellers may have acquiesced in the general feeling, that "it is impossible to cultivate these wastes," they may, nevertheless, have been inclined to believe that a district so peculiar, in such a situation, may still have its part to play, in some way or other, in the forward movements of civilization. That part the benevolent Charles Kingsley imagined to be the furnishing of a water supply to London; or, to use his own words, "Even those upper gravel layers, which are absolutely beyond the hope of cultivation, at least till science has progressed for centuries more, may possibly possess by their very barrenness a wealth of their own in their capacity to furnish to London a copious supply of pure, well aerated, and naturally filtered water, which no science can imitate or improve;" and perhaps this idea of a water supply from the source in question may have been well founded.

In the matter of unredeemable barrenness, which it would require the progress of science for centuries more to bring under cultivation, he has, however, been proved to be wrong. There came a gentleman, Mr. Mongredien—not after the scientific progress of centuries, but within half a dozen years of the publication of the volume I have been quoting from, whose energy, capital, and judgment have transformed 300 acres of these "uncultivated wastes" into charming gardens and thriving plantations. The soil, as treated by Mr. Mongredien, has indeed proved itself prolific in a most extraordinary degree—Birches, and other trees, from seed, having attained a height of from 15 to 20 feet within five years. Mr. Mongredien, after he had purchased the land soon perceived that the stratum of rust, at whatever depth, must be broken up before natural drainage could be effected, without which successful cultivation cannot be carried on. Being confirmed in this view by an old inhabitant, who said nothing could grow in his garden till he had broken through the "rust," he set to work to trench a large portion of the desert region which he had purchased, breaking through the "rust" at whatever depth it might be. This done, it was soon found that the rust itself, which had previously been a fatal bar to vegetation, became a valuable agent of fertility. Under the alternate action of the sun and rain it crumbled to a rich red earth, which soon proved to be a powerful fertilizer, and under its action, in combination with the light stony gravel, and with a natural drainage permanently established, the plantations, and lawns, and flowers,

* "Miscellanies," by Charles Kingsley, vol. 2, pp. 230 and 231.



AN ORNAMENTAL NURSERY: HEATHERSIDE, NEAR FARNBOROUGH, SURREY.

and even the succulent vegetables of the kitchen garden thrive again—and with truly unexampled rapidity.

It was thus that Mr. Mongredien, by his enterprise, judgment, and capital, created that horticultural transformation scene of very remarkable character, driving out a desert, and causing a garden to occupy its place. Let any one look at the noble sweep of lawns, the view terminating with the picturesque hills of Aldershot, as represented in our illustration, and notice the finely-grown shrubs and trees, especially the noble collection of Conifers, and he will be compelled to admit that as the work of a brief five years it seems more like "the airy fabric of a vision," than the solid result of human labour, judgment, and enterprise. It is to be remarked also, in regard to this hill-top garden, so recently a desert, that nearly all our newly introduced trees, shrubs, and herbaceous plants, are there to be found in great perfection; and that many kinds, which are often very tender under the most careful nursing in sheltered, and what are called favourable situations, here thrive with a robust luxuriance which it is delightful to behold. In short, this place is certainly one of the most charming wonders of horticultural science and art to be met with within an hour's railway trip of London. Mr. Mongredien has named his place Heatherside, as being still surrounded on every side by the wild brown Heather.

At the suggestion of his head gardener, Mr. Mongredien, after reserving about 70 acres of lawn and shrubbery for his own villa, has converted the rest of this now fertile domain into a very extensive nursery, in which acres of grand specimens of *Wellingtonia*, *Cupressus Lawsoniana*, *Pinus lasiocarpa*, and other coniferæ, with scores of fine species of Maple are now growing.

It is impossible in a limited reference of this sort to give an idea of the admirable design and rich and varied contents of this noble young nursery. The series of new propagating and other glass houses, the excellently built and contrived storehouses and packing sheds, the many mites of well-planned drives and walks—are all arranged with a boldness and thoroughness of design which surprise even those familiar with our most extensive nurseries. As to the contents of the nursery, they are of the richest and most varied kind, particularly in the tree and shrub department, as might be expected in a garden stocked under the direction of the author of "Trees and Shrubs for English Plantations." There is scarcely a hardy species obtainable in European nurseries or gardens that is not represented here, and, in consequence, there are many valuable kinds rarely seen elsewhere. In addition to the usual departments of a first-class nursery, there are, however, two here in connection with the tree and shrub departments which must be named. One is an experimental ground, exclusively devoted to testing the hardiness of many plants usually supposed to be too tender to bear our climate; this has already yielded good fruit. The other interesting department is the wilderness, in which, while there is plenty of room for a good collection of specimen trees, there is also a good deal of space given to the naturalisation, so to speak, of shrubs, &c. Treated in this way, various kinds of Sun Rose or *Cistus* thrive well. They are very handsome seen in this almost wild condition, among long Grasses and trailing plants.

FRUIT AND VEGETABLE CULTURE AT BURGHLEY.

BURGHLEY is noted for its stately mansion, extensive parks, and last, but not least, for its fine old kitchen and fruit gardens. It is to the latter feature that we propose to direct attention in this paper. Few persons have any definite idea of the demand made on this department at Burghley House; and this demand, large as it undoubtedly is, meets with a full supply, fruit and vegetables being grown in large quantities, while the quality is of the finest description.

VINES.

The Vineries are just now well worth seeing, the crops being heavy, regular, and well coloured, although the weight carried by each rod is something surprising. Splendid bunches of Black Hamburgh may now be cut by the hundred-weight if required, and the Muscats are fast colouring up in

the first house. The early house of Hamburgs has a very interesting history, the Vines having been planted upwards of fifty years ago. After they had been planted some ten or twelve years, a large number of dead deer were buried in the border in place of manure. We are apt to look on this style of applying stimulants to Vine borders as being rather too decided a measure now-a-days; but at the time it was believed to be a capital mode of procedure. Some four or five years ago Mr. Gilbert renovated these Vines by training in young rods from the base of the old canes; hence the tremendous crops of heavy and finely-finished bunches to which we have just alluded. Forcing is commenced in the Hamburgh house about Christmas, and the border outside is then covered with stable manure 2 or 3 feet deep, so as to afford a genial bottom-heat at the roots, and induce that reciprocal action between root and branch, which conduces so much towards success in Grape culture. The earliest supply of fruit is obtained from pot Vines, and we noticed a splendid lot outside one of the houses, remarkable for their vigorous short-jointed habit. These have made their growth, and have plenty of time to ripen their wood thoroughly before forcing begins in the autumn. The secret of success with pot Vines is to get a strong growth early in the season, and then train them along a south wall, or other warm sunny position so as to ripen their tissues and sap, thus storing up energy for the production of fine fruit. Vines are here grown in small pots for the decoration of the dinner-table, and they have a beautiful appearance when bearing fruit and fresh green foliage. Of course roots are allowed to escape from the small pot into a larger pot placed below it, and filled with good hearty loam and rotten stable-manure. Manure-water is liberally applied when the bunches are swelling off, and, when the fruit is ripe and wanted for the table, the roots are severed below the small pot and it is then dropped carefully into an ornamental vase and carried to the dining-room. From three to six bunches only are allowed to remain on each cane, and herein lies the secret of finely-coloured bunches, well covered with heavy bloom, that add so much to their appearance on the table. Mr. Gilbert intends growing both Peaches and Oranges in small pots for dinner-table decoration, and the hint is certainly worth acting on, as they are managed with but slight additional labour, if any, and are always more interesting than the fruit alone as gathered and arranged on dishes. Two houses of Muscats are well set and are remarkably fine and regular, both in bunch and berry. A one-year-old graft of Thomson's Golden Champion bears seven fine clusters, and is also making fine strong growth. The old Trebbiano Grape is now neglected by many growers, but we were informed that it is much liked here as grown in an early house. When grown in late Vineries, as is generally the case, there is not sufficient hot sunny weather to bring out the flavour, and it is consequently not much thought of; but, if ripened off under a hot sun, it is one of the best and most useful of white Grapes, and a tremendous bearer. A Vine of Madresfield Court bears a few nice bunches, and was propagated by sticking a piece of the old wood in the border just like a Black Currant cutting. This is a very distinct and useful Grape worth including in every good collection of Vines.

PINES.

These are rather extensively grown in brick pits with dung linings, as well as in houses. These pits are not very striking in appearance, but the sturdy plants inside seemed perfectly at home. The kinds mostly cultivated are Queens, Enville, Otaheite, Cayenne, and one or two other kinds. What struck us more particularly was the small size of the pots, and the short thick foliage of the plants, which have a dwarf appearance, though bearing fine even fruit, varying from 4 to 8 lbs. each. Small pots, good hearty loam, and plenty of genial bottom heat and air, are here relied on for success in the culture of this noble fruit. The plants are close to the glass, and are allowed plenty of room when plunged, so that each leaf gets its full share of sunlight. As the fruit commence to colour, the plants are removed to a dry airy fruit room—one of the largest and best we have ever met with—and here they are allowed to remain until required for use. Pines are here used in quantity, not only for the dessert as they ripen, but also for preserving. The system of growing Pines in small

pots has much to recommend it, more especially in cold wet seasons, when the vital force of the plants is at a low ebb, and it is easy to supply stimulants, in the shape of top-dressings and liquid manure, as soon as the pots become full of hungry fibres. The treatment carried out here convinces us more than ever that the size, weight, and quality of the fruit grown depends more on the robust and sturdy constitution of the succession plants, than on their size or length of foliage; and we cannot protest too strongly against the crowding system generally adopted, and by which the plants become attenuated, and in many cases debilitated by exclusion from the sun and air essential to their healthfulness and vigour. The kinds now ripening are the Enville and Otaheite, both fine fruits, but they are rather apt to go black at the core unless used as soon as they become fully ripe.

MELONS.

The neat span-roofed Melon-houses were in splendid condition at the time of our visit, the plants being fresh and healthy, and the fruit abundant. About 100 fine fruit were swelling off or ripening; and some of these, it is almost needless to add, were beautiful examples of what a Melon should be in shape, colour, depth of flesh, and flavour. The kinds grown are, for the most part, new hybrids raised by Mr. Gilbert, if we except the old scarlet Gem, which still claims a foremost place among the finest scarlet-fleshed kinds. Among others bearing fine fruit, we may specially notice Burghley Green Flesh, a fine-formed fruit of the most delicious flavour—qualities also inherited by Victory of Bath, Improved Cashmere, and Gilbert's Green Flesh, all of which have obtained special certificates, and one or two have taken first prizes at Bath and elsewhere. The Melon house is light, and well adapted for the culture of this fruit, and can also be utilised for Cucumber cultivation during the winter season. Melon-houses are also very useful for growing Tomatoes in pots during the winter season, or they may be planted out of pots as soon as the last crop of Melons is cleared off, and trained up the wires in their place, where they will go on ripening their fruit.

HARDY FRUIT GARDEN.

The crops in this department are, on the whole, in excellent condition, all the best kinds of fruit being cultivated in quantity and on the most approved principles. The soil is a good heavy loam, 3 feet deep, and, when thoroughly well worked and manured, it grows some of the finest plants and vegetables in the country. The garden is divided by rectangular walls, on which some of the choicer Apricots, Peaches, Figs, Pears, and Plums are grown. Apricots are a very fair crop, on 1,700 feet of wall devoted to fine healthy young trees but recently planted. Plums are this year but a middling crop; Pears and Apples are about the average. The fine Walnut trees here are laden with large quantities of green fruit, though in many other districts they are but a poor crop. Peaches in the houses have been very fine; those on the walls are a very fair crop, and are covered by an overhanging glass coping which is of great use in protecting the young flower buds from heavy rains and sudden spring frosts.

STRAWBERRIES.

Strawberries are over for this season, having been quite up to the usual standard. All the Strawberry plants are destroyed after the second year, and fresh plantations made up with young suckers. At the time of our visit we found hundreds of young plants of the best varieties all nicely rooted and nearly ready for planting. These will be planted out from 2 to 3 feet apart on well-trenched heavily-manured quarters, and soon develop themselves, producing, in many cases, excellent crops the following summer. Though planted nearly a yard apart, the one-year old plants, in many cases, touch each other. The kinds grown are Keen's Seedling, one of the best and most reliable for a heavy crop; Ingram's Late Pine, a fine conical fruit somewhat resembling Elton Pine, with the flesh coloured throughout as in that variety; Black Bess is also a productive variety. Dr. Hogg is one of the finest Strawberries in cultivation so far as appearance goes, and is well suited for exhibition purposes. The Old Roseberry, or Late Scarlet as it is sometimes called in market gardens, is a profuse bearer, and the finest of all Strawberries for preserving, having a very rich flavour and being highly coloured. Rasp-

berries grow well, and a plantation of the Prince of Wales is now bearing enormous quantities of fine highly-flavoured fruit. Gooseberries and Currants are a full crop; in many cases branches of the bushes are actually borne to the ground with the enormous quantities of fruit. The black Currant bushes, many of which are evidently very old, were cut down a year or two ago, and the result is that the fruit now borne on the young branches is of the finest quality and abundant in quantity.

KITCHEN GARDEN.

Several acres of kitchen garden are required to meet the enormous demand on this part of the establishment, and the very most is made of the ground by liberal manuring and deep cultivation. Among other things worthy of notice are the Peas, grown here under very favourable conditions. A grand row of Laxton's Omega, on one of the Vine borders, was a fine sight, being heavily laden with plump well-filled pods. Other new kinds, a G. F. Wilson, Popular, and William I. also look well. The last-named is a splendid Pea, as is also Sutton's Improved Princess Royal, a variety something in the way of McLean's Advancer, though larger and superior to that variety. It is surprising to what perfection Peas may be brought by liberal cultivation and deep tillage. Potatoes are doing well, and as yet there appears to be no evidence of the disease. Flukes and Lapstones are now yielding well, the latter being one of the finest varieties in cultivation, and one of the most productive. Climax is a fine variety, and is now producing fine crops of clean well-flavoured tubers. The sets of this were planted last October, and the success here obtained argues well for autumn planting where practicable. This system forwards work to a considerable extent, besides proving advantageous in other respects. Early Rose is a fine-looking Potato and a heavy cropper, but does not find much favour with those who know a really good Potato when cooked. Premier, and Sutton's Red Flourball are also largely grown. One of the South borders is planted with several different varieties, a yard apart each way, which yield immense crops of finely-formed clean tubers. Mr. Gilbert is in favour of using sawdust in the culture of Potatoes, and finds that they turn out beautifully clean and semi-transparent when this material is mixed in the rows. Doubtless this is useful on a small scale where fine tubers are required for exhibition purposes. Celery is coming on nicely, and promises to be of good quality. A few dozen fine heads are earthed up with heaps of yellow sand, and protected with "Simpson's Wortley Celery Collar," an admirable contrivance for exhibition Celery, as it keeps the stems clean and white. Brussels Sprouts and Snow's Broccoli in broad breadths look remarkably well. This Broccoli is invaluable for early spring crops, and produces large, firm, white heads, well protected by foliage. If any blasts of rough weather occur during the autumn or winter months, a thin covering of common Brake Fern is a very useful and effective material for protection. One of the most interesting features in the kitchen garden are the Mushroom ridges, on which large quantities of this esculent are produced during the spring and early summer months. These ridges are each 3 to 4 feet high, and vary in length according to the supply required. They are formed of horse-droppings and fibrous loam mixed, and are spawned and covered with a layer of soil in the ordinary way. After spawning they are covered with a thick coat of straw or Fern, and the crops produced on these out-door beds are something enormous. It is a plan that may be relied on for furnishing a good supply, and is specially adapted for gardeners who have not the convenience of a Mushroom house. Lettuce planted on ridges between the Celery trenches is doing well and in one of the dung frames we noticed nice healthy plants of the common Egg plant, (*Solanum Melongena*) often called Brinjals or Aubergines. These plants were bearing fruit larger than any we have seen imported in this country from the continent. We specially noted the miniature frames or handlights designed and registered by Mr. Gilbert. These are largely used at Burghley for out-door propagation and other purposes where any slight protection is required temporarily. They are simple in construction and consequently seldom need repairs, while their first cost is so moderate that they come within the reach of every artizan fond of gardening.

THE PROPAGATOR.

GOLDEN VARIEGATED GERANIUMS.

DURING the last seven years I have had a good many of these through my hands, but we still retain Mrs. Pollock and Lady Cullum as leading varieties. The truth is, those two kinds are as effective in the flower garden as any I have yet seen. What does one shade (especially if inconstant) matter either way? What we more especially want is vigour of constitution, and the two varieties I have mentioned possess that in a remarkable degree—in fact, we find them nearly as hardy and as manageable as the green-leaved kinds, both as regards propagation and preservation through the winter. For several years past we have struck our autumn stock of from 800 to 1,000 in the beginning of September, full in the sun on a south border, with scarcely any loss worth naming. The only preparation the border received was to pass about 3 inches of the surface through a $\frac{1}{2}$ -inch sieve, to take out the stones. I think it was the late Donald Beaton who said, in his usual racy way, that the best way to strike them was to dibble them into a south border, and forget all about them till it was time to pot them up. After the first watering, the dews and showers that occasionally fall will keep their leaves up. Early in October they will be well rooted, and should be potted into thumb pots singly, and placed near the glass in a warm greenhouse for about three weeks, by which time the plants will be established, and ready for removal to their winter quarters in a cold orchard house, on shelves near the glass. They should always have abundance of ventilation (back and front), except when frosty winds prevail, and they should be watered about once a week. If time permit, they should be shaken out in March, and re-potted into clean 60-sized pots, and when established should be moved out to the cold pits. Since we have kept our autumn stock almost wholly without fire heat, except in case of severe frost, and at the same time fairly dry, they have been far superior, both in strength and colour to what they used to be. Being in a dry house close to the glass, with a constant circulation of fresh air, they have every chance of making bright stocky plants. We don't want to push them for spring cuttings, as no propagator requires to be told that it is useless to take cuttings from a cold house and attempt to strike them in heat. But still spring-struck plants are very useful for certain purposes; they make growth more freely, and the foliage is generally finer than on older plants; we therefore always pot up a few hundreds of old plants from the beds to furnish the cuttings in spring, and those old plants are pushed on in a warm house for several weeks before the cuttings are required. One of the most successful propagators of this class of Geraniums I ever knew always struck his cuttings in a low lean-to house, in a bed of soil over a flue; he never used any pots, but simply dibbled the cuttings into the soil. There was always a nice steady heat, but no damping (damp is the great enemy to guard against). But flues for heating purposes (although not in all contrivances to be despised) are now almost things of the past. Cuttings of these Geraniums may, however, be successfully struck in spring in 48-sized pots, about five or six cuttings being dibbled round the sides, and the pots placed just over the hot-water pipes in a warm, moderately dry house. I always like about a fourth of the soil to be peat, as I think peat is retentive of moisture, and renders frequent waterings less necessary till the cuttings are rooted. There is, however, no occasion to particularise composts, as really more depends upon the dryness of the atmosphere of the house than upon any particular soil. Sandy loam and peat, with a good sprinkling of sand, I have always found suitable, with a warm place to set the pots on, such as a flue or hot pipes; not that the pots should touch the pipes—a shelf or a thin board should intervene. We always have plenty of cuttings from our old plants; but it is not desirable to have them very large—cuttings about an inch long or a little more are better than larger ones, as they don't strike so freely and quickly when cut close to the old wood. Don't water more than is necessary, and, to avoid the necessity for doing so, it is better to shade lightly for days in bright sunshine, just to keep the leaves up. It is bad policy to allow cuttings to flag under a hot sun, and then to syringe or water them.

E. H.

BULBILS ON THE STEMS OF LILIUM CANDIDUM.

M. BRIANT, head gardener at the Ecole de Cluny, relates a curious instance of the production of bulbils on the stems of this (the White) Lily. These stems had been cut 2 or 3 inches below the surface of the soil, and were afterwards placed in a lower room, which was dark, sheltered from the sun's rays, and somewhat damp. Here, after a short time, they produced a number of these adventitious bulbils (six to twelve on each stem) on the lower part of the stem. The bulbils were white, scaly, and about the size of a small Hazel-nut. Some of them emitted roots from their base. M. Briant's explanation is as follows:—After flowering, a good deal of sap remains in the stem. This, in the natural course of things, descends gradually to the root, there to be elaborated and serve to produce new root-bulbs. When the stem is cut off at the base, the descending sap, being arrested in its flow at that point, accumulates and provokes the formation of these bulbils on the lower part of the stem. M. Briant calls attention to the fact that, if other species of Lilies can be brought to produce stem-bulbils in this way, many rare kinds, which naturally form few new root-bulbs, may be much more extensively propagated than has been hitherto found possible.

W. M.

THE GARDEN FLORA.

NEW AND RARE PLANTS RECENTLY FIGURED.

Netted-flowered Meninia (*M. turgida*).—An acanthaceous plant from Cochin China, possessing considerable local repute for its medicinal properties, and bearing a terminal spike of white flowers netted with bright rose. It is a plant of straggling habit, and flowered in April of the present year in the Jardin des Plantes.

Many-branched Crassula (*C. profusa*).—An easily grown procumbent species, rooting freely at the joints, and bearing numerous white flowers arranged in terminal heads. It is adapted for suspending in baskets, or for brackets in a cool greenhouse, or even for window culture.

Malayan Rhododendron (*R. malayanum*).—A small flowering shrub, bearing clusters of rosy flowers, having bright crimson tubes, the foliage being of a pale green hue above and brown beneath. It comes from the Malayan Archipelago, and has flowered with Messrs. Rolleston & Sons, at Tooting.

The Rock Omphalodes (*O. Lucilæ*).—This is a very beautiful species, bearing flowers each the size of a shilling, which vary in colour from rosy-purple to azure blue. The plant is dwarf and procumbent in habit, and is a good addition to Alpine and herbaceous rock plants. It is found in one or two localities in Asia Minor, at elevations of 7,000 to 8,000 feet.

Alternate-flowered Odontoglossum (*O. tripudians*).—A very beautiful species from the highlands of Peru, and amenable to cool treatment. It bears from eight to ten-flowered spikes of showy flowers, somewhat resembling those of a short-petaled *O. luteo-purpureum* in form and colour. Sepals dark brown, tipped with yellow; petals yellow, barred with brown; lip creamy white, spotted with purplish-rose colour. It is a fine addition to this now popular genus.

Yellow Elleanthus (*Elleanthus xanthocomus*).—A curious little yellow-flowered Orchid, having the general habit and foliage of a *Sobralia*. It has been flowered by W. W. Saunders, Esq., F.L.S., Hilfield House, Reigate. It is a native of Peru, and bears its flowers at the apex of reed-like stems, twelve to eighteen inches in height.

Fragrant Boronia (*Boronia megastigma*).—An Australian species, chiefly remarkable for its delicious perfume. It is a plant of slender habit, and grows well in an ordinary greenhouse temperature. The four-petaled flowers are very singular in colour, being golden-yellow within, while the outside is of a dull purplish-brown. Most of the *Boronias* bear pink or rosy-purple flowers, and one or two, as *B. foetidissima*, are remarkable for their offensive fox-like odour.—*Botanical Magazine*.

Morell's Bilbergia (*B. Morelliana*).—A very effective Bromeliad, similar in habit to *Echmea fulgens*, and bearing a terminal, drooping spike of purplish-blue flowers, each flower being subtended by a large crimson-scarlet bract, two or three inches long. It is a native of Bahia and the Brazils.—*Belgique Horticole*.

Tesselated Tillandsia (*T. tessellata*).—Another handsome Bromeliad of portly appearance and picturesque habit. Its broad deep green foliage is arranged in a vasisform manner, gracefully recurved at the apices of the leaves, and marked with dark reddish bands, or mosaic beneath.—*L'Illustration Horticole*.

THE GROTTO OF THETIS AT POTSDAM.

IN writing recently of the elegant colonnade at Sans Souci, garden architecture, with its regular lines and symmetrical ornaments, was necessarily treated as a striking, and, at the same time agreeable, contrast to the graceful irregularities of Nature. But when artificial work of a rustic character is introduced, which is intended to be more or less an imitation of Nature, it is harmony and not contrast that should be sought. Thus, in the grotto of Thetis at Potsdam, the two sculptured lions, on their hard square-panelled pedestals, are out of place, and utterly destructive of the effect which the deviser of the scene should have sought to produce. In Chinese gardens of the wealthy classes, the intricacy and extraordinary elaboration of artificial rockwork is carried to the highest conceivable extent, and often with an amount of artistic skill and good taste which leave the efforts of self-sufficient Europeans far behind. Sculpture is sometimes introduced; but then it is invariably of a realistic character,

introduces the form of a tiger, peering through an opening in the matted underwood; or that of an anaconda suspending his coils from the branches of a great tree above, ready to enwrap the intruder in his fatal embrace; and such objects are in harmony with the scene. Not that animals, painted in their natural colours with all the cunning of Chinese pencils, can be deemed legitimate objects in a garden scene, nor can they be recommended for imitation; still they are better, from a certain point of view, than the classical white marble lions that are so incongruously placed at the entrance of the Grotto of Thetis, in the gardens of Potsdam. It is true that the arch of that grotto is not intended to appear as a natural one, but as a passage rudely cut through an intervening ledge of rock; but it has no regularity of form, and certainly no architectural dressing of any kind, while parasitic plants are allowed to run wildly over its surface. In association, therefore, with such a feature, classic lions of white marble on their formal pedestals have no *raison d'être*;



Grotto of Thetis.

and seeks, in a simulated wild and rocky garden, to produce the effect of wild animals as they might appear in their native retreats. In the wildernesses of Chinese gardens, where the fantastic forms of art are made to assume the effects of rugged nature in a striking, and frequently very felicitous manner, the gloom of natural forests is often imitated with good effect, especially in the well-contrived approaches which are so devised as to pass beneath lofty and thickly-foliaged trees, in order that their deep shades may prepare spectators for an entire change of scene from the bright-hued flower garden through which they have passed. They are duly prepared for the aspects of jungle, and rocky chasm, and jagged rocks towering in fantastic shapes to a height where even tropical climbers can scarcely reach their summits. Such a scene is thus found opening upon them in the dim light produced by dark and lofty trees, hung with the heavy draperies of huge light-obstructing parasites that suspend themselves from their branches. In such a situation, the Chinese horticulturist often

nor has the neat and symmetrical flight of marble steps, finished in all their lines by the careful chisel of the skilful mason; instead of which, the steps should have been ruggedly hewn in coarse stone, and grass and weeds allowed to root freely in their interstices; and if, also, an approach to the Grotto of Thetis had been devised beneath the shadow of closely-planted trees, its peculiar characteristics would have opened upon the spectator as a pleasing and marked contrast to the more regularly planned portions of the gardens: but the Grecian lions—or rather lion and lioness—treated in the style of ordinary sculpture, carry the ideas of the spectator back to the sculptures and temples, and marble seats and fountains of the rest of the gardens, and effectually prevent the refreshing novelty of impression which might have been the result of a more thoughtful and skilful arrangement.

In addition to the foregoing remarks, it may be observed that, Thetis being a mythological sea-goddess, her grotto would

have been much more appropriately represented as a cave on the "sea-beat shore," with the entrance embellished by representations of the many forms of graceful *Algæ*, or seaweeds, while the "lions" guarding the portals, if such were deemed necessary, should, at all events, be "sea-lions."

NOEL HUMPHREYS.

THE KITCHEN GARDEN.

POTATO CROPS IN THE SOUTH AND SOUTH-WEST OF ENGLAND.

A SHORT time ago I sent you an article upon the Potato disease. I have since then been over a considerable area in the south and south-west of England, and, as a matter of course, have paid great attention to the fruit crops (of which more at another time), and especially to the Potato crop, as this is the season when we expect to see it attacked by the disease. I expressed an opinion, in my last that, unless some sudden electrical change took place, it was likely that we should escape the disease this season. The dreaded electrical storm came, and burst with unmitigated fury over a great extent of this country. It commenced here (Weymouth) in the middle of the night on the 23rd ult.; and whilst it lasted, which was happily only for a short time, it was very severe. I was curious to know what was the result of such a storm on the Potato crops, and examined all within my reach; but could not find that any mischief had been done. I also went to the market and made inquiries of the growers and sellers, and found that, excepting along the sea-coast, there was little or no appearance of the disease. One man had picked out a few Early Rose that were affected, but on inquiry I found that they had been grown on the sea-coast, and had to contend with the fog, combined with the heavy electrical state of the atmosphere. To put the matter to the test, I went over to Wyke, close to the sea, where they grow large crops of Potatoes for the Weymouth market. Here I was sorry to find my worst fears realised. The electricity, combined with a dense sea-fog, had done sad mischief. In a field of about five or six acres, I do not think that there remained one-tenth of the crop sound; they were digging them up to boil for the pigs. I watched the digging, and during the time I remained I did not see a sound tuber taken up, and I find, on making inquiries, that along the sea-coast a great deal of disease exists; but, with regard to the inland produce, I hear very promising accounts. I calculate that if we could remain free to the middle or end of August from any great electrical disturbance, and, if nice drying breezes prevailed, very little disease would afflict us this season. With the exception of the storm of the 23rd, the weather has been everything that one could wish as far as the Potato is concerned. I forgot to state above, when speaking of the field at Wyke, that, up to the night of the 22nd and morning of the 23rd of July, not a diseased tuber was found in the field—at least, so said my Potato-digging informant. I think nothing can afford more positive proof that we owe the Potato disease to electrical action, combined with a damp atmosphere, than the case of the field at Wyke, and that all our researches after microscopic fungi are useless, as far as doing anything towards staying the disease, when the atmospherical conditions are favourable to its development.

J. SCOTT.

Merriott, Somerset.

Advantages of Hoeing.—Too many persons who use the hoe suppose that the chief benefit derived from it is to kill the weeds. That certainly is an important work, and one greatly neglected. Weeds are not only in the way of cultivating the crops which we plant, but they rob them of much of the nutriment which they need. Hoeing, then, is an essential service in respect to destroying the weeds. There are other advantages, however, which are commonly overlooked. Let us see: 1. The loosening of the soil in the operation of hoeing is beneficial to the plants, as much as the destruction of the weeds, or more so. 2. Moisture abounds in the atmosphere during the hottest months, and is absorbed and retained most abundantly by a soil which is in the most friable state. Pro-

fessor Schluber found that 1,000 grains of stiff clay absorbed in 24 hours only 36 grains of moisture from the air; while garden mould absorbed 45 grains, and fine magnesia absorbed 76 grains. 3. Then, again, pulverising soil enables it better to retain the moisture absorbed. 4. The soil, in order to be healthy and active, must breathe. A light porous soil admits the air, and thus it is fed and greatly invigorated by the atmosphere. 5. The sun's rays heat a hard soil much more quickly than a loose one, and the hotter the soil is, so much greater will be the evaporation from it. So that the hard soil is deprived of its moisture much sooner than one of a loose texture. 6. The soil that has been kept loose near the surface by the action of the hoe, will receive and hold the rain water that falls, while a hard soil will allow most of it to run off into the valleys and streams as it falls.

GARDEN DESTROYERS.

BEEES DESTRUCTIVE TO FRUIT.

IN America, fruit crops are liable to serious injury from the attacks of the common hive bee, which there seems to rival the wasp in its love for ripe Grapes, Peaches, &c. We are not aware that in this country hive bees display such a decided *penchant* for ripe fruit as to call for the adoption of any repressive measures against them; but that such is sometimes the case in America the following remarks of Professor Riley, State Entomologist of Missouri, are amply sufficient to prove:—

"During very dry seasons, such as we have experienced in this country for the past two years, when honey-producing flowers are scarce, bees, which in ordinary seasons do little or no injury, are apt to become great nuisances in fruit gardens. There are those who believe them incapable of injuring fruit at first hand, and who contend that they simply follow in the path of birds and wasps which first cut the skin. This is pure sentiment, and uttered by those who blindly magnify the virtues of the honey-bee, and are guiltless of having given the subject serious investigation. Those who have carefully watched them during such seasons as 1871, 1872, in vineyard or orchard, especially in autumn, will not be likely to hold such erroneous views. In thus condemning the little busy bee I expect to have most bee-keepers down on me, as well as many of my scientific friends, as for instance, Dr. H. Hagen and Dr. Asa Gray, of Cambridge, and Dr. A. S. Packard, jun., of Salem, Mass., each of whom spiritedly took up the defence of the bees some years ago, when the people of Wrentham, in that State, voted, by a two-thirds majority, that no bees should be kept in that town. These gentlemen entirely overlooked the real facts, however, and simply endeavoured to show that bees could do no injury to fruit by frequenting the flowers, but that they were beneficial in aiding fertilisation and cross-fertilisation. In this position I fully concur, and I have no sympathy with the bee prejudice which has at times possessed people with the belief that fruit is injuriously affected by the bees' visits to the flowers and abstraction of the nectar. The existence of this kind of apiphobia at the present day is, I take it, more imaginary than real, and the objection to bees, under certain circumstances, comes from the real and direct injury which they do to the fruit. The mouth of the honey-bee is fitted both for lapping and biting—a characteristic of the order (Hymenoptera) to which it belongs. The lower lip forms a tongue by which it laps up nectar, and the upper jaws are fitted for biting and cutting, though they are not generally used for purposes of manducation as with other mandibulate insects; and, where there is a choice, the bee doubtless prefers an already ruptured Grape or Peach to one which is whole. Mr. Wielandy, of Jefferson City, was last year so annoyed by his neighbour's bees, that he lost his entire Peach crop, which was rendered unfit for market by their injuries; and these complaints are by no means exceptional. In such cases the question "what to do" really becomes a serious one, though I believe legal redress is not possible. The bees which injured Mr. Wielandy's fruit were owned by a neighbour who had but a small plot of land and no bee-pasture whatever; and, on the principle that their owner had no more abstract right to allow his bee stock to depredate on his neighbour's fruit than he had to turn his hogs into his cornfields, I did not hesitate to advise the protective measure of poisoning. This may be effected as follows:—First, plant a plot of ground—as much as can well be spared—with Milkweed, alias Silkweed (*Asclepias*, the common *A. Cornuti* answering the purpose very well). When these plants come into flower, the bees will be seriously discommoded thereby; for the flowers are so peculiarly constructed that the pollen masses, which look like little flattened ovoid pieces of wax, adhere firmly to the hair and claws of bees, as they climb over the umbels in search of nectar.

The pollen masses, when numerous, encumber the bees to such an extent that they cannot perform their proper functions, and drop to the ground and die. I have known an apiary so decimated from this cause that fully one-half of the hives gave out. Secondly, make a mixture of sweetened water, rum, and the ordinary fly-poison of the shops (cobalt and arsenic), and place it in shallow pans in exposed places, or saturate strips of cloth or paper with it, and attach them to the trees."

CHERMES CARICÆ.

MR. BARRON, the garden superintendent of the Royal Horticultural Society, has drawn our attention to two species of Coccus which have come under his observation on the Fig trees at Chiswick. One is an elongate, mussel-shaped, slender Coccus, like the *Aspidiotus conchiformis*, and seems to be undescribed. It confines itself almost entirely to the under side of the leaf. The other is, to all appearance, the *Chermes Caricæ* of Fabri-



The Fig Scale Insect.

cus. Never having seen authentic specimens of that species in the living state, we speak with a certain amount of hesitation; but, making allowance for the difference that may be expected between dead and living specimens, we have little doubt that it is the same as the species figured in the accompanying woodcut, which is taken from Boisduval's figure of *Chermes Caricæ*. It might at first, indeed, be thought improbable that a Coccus, which is especially associated with the Fig trees of Provence, and probably is a native of that country, should find its way to Chiswick. But it had long since found its way to Paris; and, as the Royal Horticultural Society have latterly been trying to make a complete collection of the different varieties of Fig tree, the improbability disappears, and it seems not unlikely that it should have found its way here on some of the imported varieties.

According to the description of the species as found in Provence, the shell of the female (nothing is known of the male)

resembles a small limpet divided on the sides into eight trapezes. Its back has a large, oval, and rather raised, swollen tubercle. The middle of each of the lateral trapezes bears a small flat depression surmounted by a very small clump of white down. The general colour of the shell is reddish grey, with deeper shades. The specimens at Chiswick sufficiently correspond with this description and figure, except that, in the fresh living insect, especially the young ones, the grooves are either faint or only indicated by a darker colour, and the depressions and down are absent. The general colour is somewhat like flesh-colour, streaked in the line of the grooves with brown.

The Fig trees attacked by this species are said to dry up from the abstraction of juice by great numbers of such a large insect spread over the whole tree. No part is sacred from them. As we observed at Chiswick, they settle on the fruit as well as on the leaves and bark; and Boisduval notes that their presence on the fruit renders it inedible, even although ripe, because the Figs cannot be pulled or eaten without crushing some of the Chermes, of which the reddish sticky substance is nowise appetising. The result of the abstraction of the juice is that the leaves and fruit fall before they are ripe. It is unnecessary to say that we draw no part of this experience from Chiswick, Mr. Barron having set himself with so much diligence to extirpate them that, when we went to see them, it was with difficulty that we could find one or two specimens. It is not difficult to wash or rub them off with a piece of coarse linen or a hair glove. The female begins to lay its eggs in the end of May. When the little ones are hatched, they are reddish and tolerably active, and spread themselves over the leaves and branches. In a few days they become greyish, and their shell begins to form. They do not, however, like some species, at once fix themselves on the spot they are to occupy to the end of their days. Even after the shell has grown so large as entirely to cover their feet, they walk about. In the month of August the greater number of them quit the leaves, in order to settle themselves on the fruit and branches. At the end of September they abandon the fruit and leaves, and fix themselves on the branches, where they pass the winter in a state of torpidity.

A. M.

Bullfinches and Caterpillars.—There is an old proverb which says, "Give every thing its due." Well, one day last week, while potting some plants, I heard the well-known note of a bullfinch among the Gooseberry bushes. "What," says I, "you bold little depredator, will you first rob the bushes of their buds, and then come for the fruit! Stay—what is that which he has on the ground? caterpillars? Yes!" and in the course of a few days our bushes were cleared of such pests, which had put in a rather formidable appearance, notwithstanding the old tan that had been placed around the bushes. Thanks, however, to the bullfinches, not one caterpillar is now left. I watched the old birds with intense gratification going from bush to bush, gathering such food for their young, which followed after them to be fed. I therefore say, refrain from killing bullfinches, at least while caterpillars are at work.—J. T., *Maesgwynne, South Wales.*

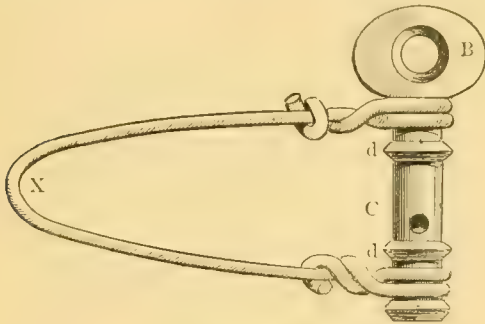
Destruction of Cockchafers.—A cultivator residing near Bar-sur-Seine, writes as follows to the French horticultural journal, *La Vigne*:—"After sunset I place in the centre of my orchard an old barrel, the inside of which I have previously well tarred. At the bottom of the barrel I place a lighted lamp. Insects of many kinds, attracted by the light, make for the lamp, and while circling round it strike against the sides of the barrel, where, meeting with the tar, their wings and legs become so clogged that they fall helpless to the bottom. In the morning I examine the barrel, and frequently take out of it ten or twelve gallons of cockchafers, which I at once destroy. A few pence worth of tar employed in this way will, without any further trouble, be the means of destroying innumerable numbers of these insects, whose larvæ are amongst the most destructive pests the gardener or farmer has to contend against."

"PERHAPS the largest orchard in the world," says M. Pynaert, in the *Bulletin d'Arboriculture*, "is to be found in California." It extends over 426 acres and contains more than 75,000 fruit trees of various kinds. A single Orange tree growing in this orchard is said to produce about 20,000 Oranges in a favourable season.

TOOLS, IMPLEMENTS, &c.

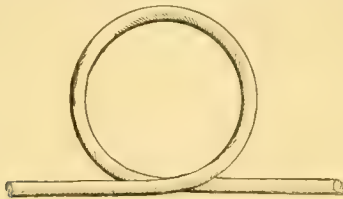
A NEW RAIDISSEUR.

AMONG the numerous "raidisseurs" manufactured in France there is none, perhaps, more effective and simple, and certainly none cheaper, than the following, made by Borel, 10, Quai du Louvre. It consists of a small iron bolt with a flat head, of the exact size here given. The hole B in the flat head is used for winding up the bolt by means of a nail or any round piece



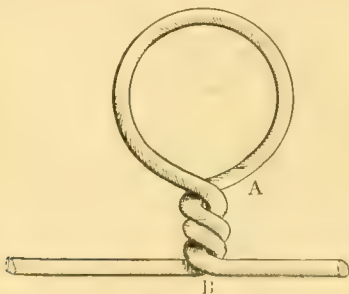
A New Tightener.

of iron. The hole at C is for introducing the end of the wire to be wound up, which coils away between the flanges d d. The bolt revolves between the coils of the stirrup-shaped wire loop X, which is itself fastened by a wire to the end post or hook of the espaliers. The whole affair, with the wire loop ready mounted, is sold for three halfpence each (15 centimes). Before this last raidisseur was invented, I had successfully



Open loop.

used for many years the following plan of tightening my wires. I made a loop somewhere about the middle of my wire by twisting it round a cylindrical piece of iron or bolt, which I left in it to prevent its closing, while I stretched the wire by hand and fastened the two ends. This done, I gave the bolt as many turns as were necessary to obtain the required degree



Loop after three turns.

of tension, and then withdrew it. I could at any future time give an additional turn or two when required. If the wire be very long, several loops may be made at equal distances apart. This method of tightening has this great advantage over almost all others, that if the power applied be too great for the force of the wire it will always give way at A, never at or beyond B; thus the loop alone comes off, leaving the full length of wire still available and ready stretched.

Versailles.

FRED. PALMER.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—The warm and genial weather which we have experienced for some time past, together with a fair amount of moisture in the soil, has invigorated greatly all kinds of bedding plants, as well as hardy herbaceous plants, which are this year unusually fresh and beautiful, and blooming profusely. Yuccas, too, have everywhere bloomed freely this season. The foliage of Robinias, Sophoras, Plane trees, Gleditschias, Elms, Oaks, Beeches, and several other trees, is still fresh and green; but Limes, particularly in the vicinity of towns, are already losing their leaves; and even Birches and Hawthorns, in some situations, are not so fresh-looking as they have been. Grass lawns are, however, still unusually verdant.

Bedding Plants.—Ordinary bedding plants, such as Pelargoniums, Verbenas, Calceolarias, Heliotropes, and similar subjects may now be regarded as at their best; this is, therefore, a good time for considering what plan of bedding shall be adopted next year, as well as for noting the improvements and rectifications that may be necessary in order to set off the ground or beds to the best advantage. In dry weather, plants in active growth will require abundance of water, as well as occasional applications of weak liquid-manure; strong-growing plants will require stakes, but as few as possible should be employed. Where Petunias, Verbenas, and similar plants are used as edgings, they should be kept pegged neatly down. Now that the plants in the carpet beds will be growing freely, both knife and shears must be used freely, so as to preserve exactitude in the pattern, for confusion, as regards design, in this mode of gardening is anything but imposing. Decaying flowers should be removed, seed-pods picked off, and unhealthy or exhausted plants replaced by fresh and vigorous ones from the reserve garden.

Propagation of Bedding Plants.—This is the principal month for obtaining a stock of young plants to stand the winter, and to propagate from in spring. Verbenas succeed best when struck now. Prepare a frame for them similar to that in which Celery is usually pricked off, and having a hard bottom; on the latter place a few inches deep of rich open sandy soil, and a layer of half an inch deep of sharp sand on the surface. Into this dibble the cuttings and shade them well for a time. After they are rooted, transplant them into boxes or pans, and keep them in a well-ventilated cold frame; or, the cuttings may at once be inserted in the boxes. If, in preparing the frames, a foot deep of leaves be firmly packed into the bottom of it three weeks prior to putting in the cuttings, they root more readily. Heliotropes, Ageratums, Salvias, Lobelias, and others, may be increased in the same manner; but August is soon enough for them. Pelargoniums of all sorts are best struck in warm borders in the open air; and, in selecting the cuttings, choose stubby and firm side-shoots if possible, and do not remove more leaves from them than those about the lowermost joint. Tricolors and the finer zonals should be taken first, and if desirable they may be inserted in pots either singly in "thumbs," or several in 48's. The pots should be filled with leaf mould, mixed with sand or surfaced with it, and the pots should be plunged close together in the borders; the cuttings being then dibbled into them. The commoner kinds root freely in the borders without pots, provided a little sand and leaf mould be incorporated with the soil, and when rooted they may be lifted and planted in boxes, or they may be inserted in the boxes at once and kept out of doors. Centaureas may also be propagated in cold frames. It is a month too soon yet to propagate Gazanias or Calceolarias, as early struck cuttings of these are not nearly so satisfactory as late ones. The prunings of Santolinas and Thyme may be used as cuttings, and inserted in pans or pots of sandy soil in a cold frame. Of Alternantheras, Coleuses, and Iresines, a young stock should now be produced by means of cuttings inserted in a gently heated pit or frame. Perhaps the best way of preserving Centaureas, Coleuses, Alternantheras, and several other plants of that character through the winter, is to keep some of the spring-struck plants in pots throughout the summer months, and when subjected to heat in spring after the hardy treatment they have received they winter well, and yield an abundance of cuttings.

Subtropical Plants.—It will be towards the end of the month before such plants as Ferdinandas, Wigandias, Utheas, Castor-oil plants, Solanums, Cannas, and Maize, will have attained perfection; and, in order to promote a good development of leaves, abundance of manure-water should be given to them, and, if necessary, a strong stake should be affixed to each. Vallota purpurea and Agapanthus umbellatus will now be in bloom, as will also be the Erythrinas, Plumbago capensis, and several others. In order to keep the Caladiums, Anthuriums, Monstera, Ferns, Dracenas, and similar

plants in a healthy and clean condition, they should be syringed every fine afternoon.

Herbaceous Plants.—Amongst these we have now in bloom several fine Spiræas, Tradescantias, Campanulas, Asters, Achilleas, Potentillas, Lathyruses, Veronicas, Tritomas, Statice, such as *S. latifolia* and *Fortunei*, Pentstemons, Phloxes, Stenactises, and others. In order to have fine flowers, the shoots should be thinned out a little, and small earth basins formed around the roots of each plant for the retention of water. Cut over at about half the length of the stems such plants that have done blooming, for the sake of neatness. Many kinds of perennials may yet be propagated from cuttings as previously recommended, and also by means of seeds, which may be either sown in a border out of doors or in boxes in frames. Gather all seeds as soon as ripe, dry them, and dress them, and either sow them immediately or keep them till spring. Prick off early sown seedlings still; layer Carnations and Pinks, and separate and transplant or pot singly such as are well rooted. Sow seeds of Pansies in boxes in frames, and propagate them by cuttings and by means of lifting and dividing the plants. Lift and pot Violets for forcing, and transplant some of the Neapolitan kind into a frame for winter work.

Annuals.—Seeds of Collinsias, Mignonette, *Linum grandiflorum* rubrum, Schizanthuses, Clarkias, Godetias, Candytufts, and others, may now be saved with little trouble. Remove plants not required for seeding purposes as soon as their bloom is over, and replace them with a stock from the reserve garden. For spring blooming sow in light soil, in a border, *Alyssum calycinum* and *maritimum*, Collinsias, Candytufts, *Limnæthes Douglassi*, *Myosotis arvensis* and *dissitiflora*, *Saponaria Calabrica*, *Silene pendula*, Virginian Stocks, *Lasthenia californica*, and several others, and as soon as they are fit to handle prick them off about an inch and a half apart each way.

Shrubberies.—The end of this month is a good time for transplanting most kinds of evergreens, Hollies perhaps excepted. In performing this operation care should be taken to preserve good roots, and if practicable a ball of earth to each plant; a good soaking of water ought likewise to be given to them. The advantages attending transplanting evergreens in the latter end of August and throughout September are the high temperature possessed by the soil during these months, and the extra amount of moisture existing in the atmosphere, the former inducing the roots to set actively to work at once; the latter preventing exhaustion by means of evaporation. Thus fortified, the plants recruit themselves at once, get thoroughly established before winter, and start into growth next spring with unchecked vigour.

SOWINGS FOR AUGUST.

Vegetables.

Crops fit for use.

Angelica	Next August.
Beet, Silver-leaved	Spring.
Borecole, Buda	Spring.
Broccoli, Snow's and Walcheren	Late Spring and early Summer.
Cabbage	Spring and early Summer.
Carrots, Early Horn and Dutch	Spring.
Cauliflowers	Spring and early Summer.
Chervil	Late Autumn.
Chicory for small salads	September.
Corn Salad	Autumn and Winter.
Cress, American	do. do.
common	In eight or ten days.
Cucumbers	Winter.
Endive	January to March.
Lettuces	Winter and Spring.
Onions	Spring and Summer.
Parsnips	Spring.
Radishes, Spanish	Winter and Spring.
common	September and October.
Spinach	Winter and Spring.
Turnips	Winter.

Flower Seeds sown in August to bloom next year.

Ammobium alatum, *Anagallis* in var., *Anchusa italica*, *Calandrinia umbellata*, *Calceolaria* (hybrid), *Centaurea Cyanus*, *Cineraria* (hybrid), *Catananche cærulea*, *Digitalis*, *Eschscholtzia*, *Gaillardias*, *Gaura Lindheimeri*, *Ipomopsis elegans*, *Loasas*, *Junaria biennis*, *Pyrethrum*, *Antirrhinum*, *Myosotis* in var., *Nycteria selaginoides*, Pansies, *Delphiniums*, *Mignonette* (in pots), *Scabious* in var., *Silene pendula*, *Vittadinia trilobata*.

Bulbous Plants.

Allium in var., *Alstroemeria* do., *Amaryllis vittata* and vars. *A. Belladonna*, *Arums*, Crown Imperial, *Dodecatheon*, Dog's-tooth Violet, *Fritillaria Melegris*, *Iris Xiphoides* and *I. Xiphoides*, *Lachenalias* in var., *Lilies* in var., *Muscari* in var., *Oxalis* in var., *Snowdrops*, *Scillas* in var., *Sparaxis* (in house or frames), various Cape bulbs.

The seeds of the following trees and shrubs may be either sown or stratified, i.e., preserved by placing them in vessels between layers of sand:—Apricot, Birch, Amelanchier, Cherry, Elm, Peach, Plum.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

AUGUST 6TH.

Flowers.—Among subjects of exhibition, which were somewhat limited on this occasion, Phloxes formed the chief feature, and among these the best came from Messrs. Downie, Laird, & Laing; indeed, that firm and Mr. T. S. Ware, of Tottenham, were the only competitors with them. In the class of a dozen distinct sorts, Messrs. Downie, Laird, & Laing were first with *Czarina*, pure white and dwarfish in habit; *Lilacina*, white outside of tube, suffused with lilac; *Bridesmaid*, like the former but having more lilac in the blooms; Mons. Domage, Madame Domage, Madame Dombraia, and Marguerite de Turenne, whitish, with pink or purple eyes; Mons. Malet, lilac; Philippa Penglase, purple; John Laing, brilliant purplish-crimson; Mons. de Laing and Lothair, salmon-red. Mr. Ware was second with Madame Crowse, Countess of Breadalbane, Erato, Corydon, Ada, Lothair, Alice, and Amabilis, red or salmon-coloured; and Triton, Princess Louise, Mrs. Laing, and Pan, lilac or purplish-lilac. Messrs. Downie, Laird, & Laing were the only competitors in the class of a collection of Phloxes. Amongst the best of them were John Laing, a brilliant purplish-crimson; *Lilacina*, Madame Barillet, Mons. Jaillard, Princess of Wales, Roi des Roses, La Croix de St. Louis, Rosy Morn, Delicata, fine white with purple tube, Mons. Marin Saison, and Queen of the Whites. Of herbaceous Lobelias, a class of plants too seldom seen, Mr. T. S. Ware furnished a dozen nice specimens, alike useful for mixed borders in summer or for conservatory decoration. Those exhibited by Mr. Ware contained St. Clair, a fine kind, with crimson foliage and brilliant scarlet flowers; Dazzle, Firefly, and Comet, good scarlets; Leo Lesseps, purplish-red; Marvel, *Purpurea regia*, and Royalty, violet-crimson; and Syphilitica grandiflora, salmon-coloured. To the same exhibitor was awarded an extra prize for some Pentstemons, of which he showed some good varieties; also some Carnations, Picotees, and Verbenas. From Mr. W. Denning, gardener to Lord Londesborough, came an excellent group of Orchids, including a magnificent specimen of *Oncidium macranthum* with three-branched flower-spikes thickly furnished with large yellow blooms; one of *Epidendrum vitellinum*, having about two score of beautiful orange-red flowers about an inch and a half across; *E. Blumei*, with eighteen fine spikes of flowers; and a nice little plant of *Aërides Thibautianum*. In this collection were also *Cattleya elegans*, Turneri, and *C. Leopoldii*, each with two fine trusses of bloom, and *C. speciosissima*, *Exoniensis*, and *crispa*; *Odontoglossum Lindleyanum* and *Alexandæ* var. *Denisoniæ*, a good pan of *Disa grandiflora*, and a fine specimen of *Thunia alba*. From Messrs. E. G. Henderson and Son, Wellington-Road Nurseries, St. John's Wood, came half a dozen fine specimens of *Cannas*, grown in small tubs, the varieties being *Rendatleri*, *Abundance*, and *Rubra superbissima*, metallic green-leaved sorts; and *Musefolia hybrida*, *Premice de Nice*, and *Shuberti* with bright green leaves. The same firm also exhibited a dark-leaved variety of *C. Musefolia* called *coccinea*, and some varieties of zonal Pelargoniums. A group of plants, suitable for decorative purposes, was furnished by Messrs. Aldous and Co., Gloucester Road, and consisted chiefly of Ferns, Palms, Lilies, Gladioli, Fuchsias, Cyperuses, &c. A group of extremely double and large flowered Balsams, of various colours, was sent by Messrs. F. and A. Smith, Dulwich. Messrs. Dixon and Co., Amherst Nurseries, Hackney, showed specimens of the double-flowered *Lobelia pumila*, which retains its habit and character, and is certainly an acquisition. From Mr. C. Turner, Slough, came out blooms of Carnations and Picotees, and also a large collection of cut flowers of Verbenas; prominent amongst the latter were Prince of Wales, bearing large trusses of exceedingly fine brilliant scarlet flowers, and Queen of Whites—pure white. A collection of blooms of seedling Carnations and Picotees was also sent by Messrs. Wood & Ingram of Huntingdon. Several forms of *Lilium tigrinum* were supplied by G. F. Wilson, Esq.; Weybridge; and some very fine Cockscombs by Mr. Douglas, Womersley House. Messrs. Carter & Co., High Holborn, sent two plants of *Placea arza*, a pretty little *Amaryllid*, and also a blue-flowered Aster-like little plant. Messrs. Dickson & Son, of Edinburgh, sent some flower-spikes of seedling Phloxes, some of which were very pretty; and Messrs. Veitch & Sons contributed a specimen of a Fern of the *Pteris tremula* section, but of a much denser growth. Messrs. Lee, Hammersmith, sent various specimens of extremely pretty ornamental shrubs, such as *Thuja aurea* and *T. semper-aurea*; *Taxus baccata argentea*, *Alnus glutinosa imperialis* and *A. g. laciniata*, *Salix tricolor*, *Hydrangea paniculata grandiflora*, and several others. A pink-flowered zonal Pelargonium named *Grand Duchess Czarevna* was sent by Mr. Hemedge, Hammersmith, and a basketful of a tricolor sort called *Circassian Beauty* by Mr. Hodgson, Gloucester Road, Plumstead. A plant named *Satyrium coccineum* was contributed by Messrs. Downie, Laird, & Laing, and a basketful of *Juniperus chinensis aurea* came from Mr. Maurice Young, of Godalming.

Fruit and Vegetables.—In the class of a single dish of Plums Mr. B. Porter, Syon Lodge, Isleworth, was first with Early Morocco; and Mr. S. Farrow, Brigadier-Hill House, Enfield, second with *Jaune Hâtive*. Dishes of Early Orleans and Early Greengage, were also exhibited. In the class of a collection of Gooseberries, Mr. J. Walker, Thane, Devon, was first with Ironmonger, red Champagne, Rough Red, smooth Early Red, Crown Bob, Drill, London Freedom, Dan's Mistake, Yellow Champagne, Late Green, Independent, Whitesmith, Thumper, Lady Leicester, Leader, and Catherina. Amongst the largest berries were

London, Drill, Thumper, Eagle, Wonderful, and Crown Bob. Mr. J. Record, Vintner's Park, Maidstone, was second with very fine fruit; and Mr. E. Clarke, the Grange, Sutton, fourth. In the class of six of the heaviest fruits, Mr. G. Kirtland, Bletchington, Oxford, was first with a mixed lot weighing 8 ounces the half dozen; Mr. J. Kirkland, Stoke Newington, third with fruit weighing 7 ounces; and Mr. J. Tomkins, Bletchington, Oxford, fourth. Mr. Wm. Earley, Valentines, sent a collection of Gooseberries, and dishes of Apples, Plums, and Apricots. The latter were regarded by the fruit committee as being of uncommon excellence. Some Queen and smooth-leaved Cayenne Pines were exhibited by Mr. Henry Plummer, Canon Hill Park, Merton, Surrey; and a Pine quite distinct from any at present in cultivation was shown by Mr. Baker, gardener to A. Basset, Esq., Sister House, Clapham Common. This was from a plant introduced from Jamaica. Mr. Berkeley, in addressing the meeting, said that the West Indian Pines are now vastly superior to what they formerly were, on account of our garden varieties having found their way thither; he also intimated that Cuba is a great Pine-growing island for exportation. Of the Little Heath Melon, the raisers, Messrs. Munro & Williamson, of Potter's Bar, sent two dozen ripe fruits, together with several small ones not long set, and which are the fourth crop from plants planted on the 5th of last March. The committee did not think quite so highly of the quality of the fruit as they formerly did, but the cause of their depreciation was accounted for by heavy and quick cropping. Mr. Browne, Leybourne Grange, sent a scarlet-fleshed hybrid Melon, and Mr. C. Osman, South Metropolitan District School, Sutton, sent some new Vegetable Marrows; but owing to the difficulty in determining what is really new, the committee have resolved to try them at Chiswick before they can award them a certificate. Mr. Osman also showed a brace of very large Marquis of Lorne Cucumbers that were grown on the stage of an ordinary greenhouse; and Mr. Wm. Bull, of Chelsea, a brace of a large white-spined Cucumber called Excelsior. From Mr. Clark, gardener to J. M. Robertson, Esq., Roehampton, came white Juncating Apples and Citron des Carmes Pears; from Mr. Cox, Redleaf, came a dish of early Milton Pears; and from G. F. Gregory, Esq., 21, Addison Road, came a half dozen of last year's Apples quite plump and sound; they were kept on a shelf in a cellar. Mr. Wm. Paul, Waltham Cross, exhibited some seedling Grapes of the Sweetwater type; the committee thought very highly of them, and resolved that Mr. Barron shall go and see the Grapes growing and report on them. Messrs. Munro and Williamson sent some large heads of Cabbages under the name of Little Heath, but they were regarded as merely being fine specimens of the Enfield or Fulham kind; and Mr. Hardy, Stour Valley, Bures, Essex, furnished stalks and pods of a variety of the Broad Windsor Bean, called Hardy's Pedigree Windsor; the committee regarded it very favourably; it has longer pods and more seeds in each pod than the ordinary Broad Windsor, and it has been resolved to try it at Chiswick in order to test its real worth.

First-class Certificates.—These were awarded to the following:—

Begonia Wm. Spinks (Chiswick), a hybrid between *B. Pearcei* and *B. Bolivensis*; the leaves are like the former, and the flowers of the same shape as the latter but of a yellow colour tinged with rose.

Hollyhock Lord Hawke (Chater), a very double large flowered sort, the blooms being of a buff colour, centre tinged with salmon.

Hollyhock Catherine (Lord Hawke), a large pink or bluish sort.

Hollyhock Octavia (Lord Hawke) a large pink kind.

Cypripedium *Sedeni* (Veitch), a very pretty hybrid between *C. longifolium* and *C. Schlumii*. The leaves are long and arched, and the flowers and flower-spikes are somewhat like the latter, but the petals are larger and more curved, and the colour of the lip and petals a pretty rose.

Olearia *Haastii* (Veitch), a hardy evergreen shrub with small bright green leaves, the back of which is of a Portland-stone colour; the plant was covered with a complete cloud of white flowers.

Carnation, King of Yellows (Turner).

Hollyhock, Red Cross Knight (Lord Hawke), a large good crimson sort.

Gooseberry, Henson's Seedling (Henson), a round red Gooseberry, somewhat hairy, prolific, of good size and first-class quality.

Prunus *variegata* (Lee), the leaves prettily mottled with creamy-yellow.

Robinia *Pseud-acacia* *aurea* (Lee), a truly yellow-leaved variety of the common False Acacia.

Alnus *incana* *laciniata* (Lee), a beautiful cut-leaved sort.

Lilium *Philippinense* (Veitch), a plant about a foot high, with long tubular white flowers, and very narrow long leaves.

COVENT GARDEN NUISANCES.

As you request me to furnish you with particulars of what passed at Bow Street on Tuesday, the 29th ult., respecting certain nuisances which are of every day occurrence in Covent Garden, I will do so to the best of my recollection. One of these nuisances is the manure carts. Dr. Ebsworth, with his legal adviser, called upon me and other parishioners to assist him in taking measures for abating this nuisance, and proposed to apply for a summons against the Duke of Bedford or his representatives. The gravamen of Dr. Ebsworth's complaint was that the odours which arise from the carts were so offensive that he could not open his windows at breakfast time, and was obliged to sleep out of town. In corroboration of his complaint, I explained that the market carts, after delivering fruit or vegetables to the wholesale agents early in the morning (generally before six o'clock), went round the town to the stable-yards, and other places, to collect manure, and that they then came back with their loads to Covent Garden to take away their baskets, which by that time had been emptied. The manure, which is often piled up to a great height, remains reeking in a hot sun till ten or eleven, and

sometimes twelve o'clock, in defiance of all rules to the contrary. The meeting at Bow Street that morning was at ten o'clock, and I incidentally mentioned that in walking to the office I had counted no fewer than twenty-nine large cart loads of manure, and I significantly observed that there were none in Bow-street; Mr. Burnaby, the chief clerk, however, replied that he had counted eight or nine there that morning. Mr. Vaughan, the sitting magistrate, entertained the application with his usual courtesy, but recommended that instead of applying for any summons we should use the powers conferred by the Police Act, Vic. 2 & 3, c. xlvii., s. liv. & lx., which prohibits offensive matter being carried through the streets between six in the morning and eight in the evening, and he further suggested that we should apply for redress to the Local Board of Works, whose duty it was to attend to such matters. I will only add, that about two years ago an application was made to the said Board of Works on this very subject, and it was then determined to prohibit manure carts from remaining in the streets after an early hour in the morning, but the injunction was only effective for a few weeks. Upon receiving the magistrate's advice on the present occasion, we forthwith proceeded to the Local Board to request their attention to the subject, and were told that it should be considered at their next meeting, which was to take place on the Thursday immediately following, but after several applications, I find that no result had been arrived at, and that a full consideration of the complaint was deferred until the next meeting.

There is another existing nuisance in Covent Garden Market, which, though not so dangerous to health as that just alluded to, is extremely unpleasant. The market carts in question wait till late in the day for their baskets, thus preventing the passage of cabs and carriages into the contiguous streets, and it is only with extreme difficulty people can get to their offices at ten o'clock in the morning. The law is, that carts should not stand beyond the denter stone at any time, and should not remain in the market after nine o'clock, but this is not observed in the slightest degree. HENRY G. BOHN.

How Flowers become Naturally Double.—At the May meeting of the Philadelphia Academy of Natural sciences, Mr. Thomas Meehan observed that, on several occasions, during the past few years, it had been noticed among the variations in nature, that the tendency to produce double flowers was, by no means, the special prerogative of the florist to originate. Many of our commonest wild flowers, which no one would think of cultivating, had double forms in cultivation which were no doubt originally found wild. Thus we had a double *Ranunculus acris*, *R. bulbosus*, *R. Ficaria*, *R. repens*, and some others. There were, in plants, two methods by which a double flower was produced. The axis of a flower was simply a branch very much retarded in its development, and generally there were, on this arrested branch, many nodes between the series forming the calyx or corolla, and the regular stamens and carpels, which were entirely suppressed. But when a double flower was produced, sometimes these usually suppressed nodes would become developed, in which case there was a great increase in the number of petals, without any disturbance in the staminal characters. But at other times there was no disturbance in the normal character of the axis. The stamens themselves merely became petaloid. This was the case in the *Epigaea* recently found by Dr. Darrach.

COVENT GARDEN MARKET.

AUGUST VII.

Fruits and Vegetables.—Home-grown Pines are excellent, and the last cargo this season of West India ones is now being disposed of. English Grapes are very good, as are also Melons and Cucumbers. Continental supplies are large, and consist chiefly of Apricots, Peaches, Nectarines, Plums, and Grapes, whilst from the Channel Islands Plums and Pears are coming in abundance. Vegetables of all kinds are wonderfully good, and although the disease has appeared amongst Potatoes, it is as yet of a very slight character.

Prices of Fruits.—Apples, per doz., 6d.; Apricots, 2s. to 4s. per doz.; Cherries, per lb., 6d. to 1s. 6d.; Chillies, per 100, 2s.; Currants, per sieve, 3s. 6d. to 6s.; Figs, per doz., 2s. to 6s.; Gooseberries, per quart, 3d. to 6d.; Grapes, hot-house, black, per lb., 1s. 6d. to 5s.; Muscats, 2s. to 6s.; Lemons, per 100, 8s. to 14s.; Melons, each, 2s. to 6s.; Nectarines, per doz., 6s. to 15s.; Oranges, per 100, 12s. to 24s.; Peaches, per doz., 12s. to 25s.; Pears, per doz., 2s. to 4s.; Pine Apples, per lb., 3s. to 6s.; Raspberries, per lb., 4d. to 1s.; Strawberries, per lb., 6d. to 1s. 6d.; Tomatoes, per doz., 1s. to 3s.; Walnuts, per bushel, 6s. to 10s. ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 3s. to 6s.; Beans, Kidney, per half sieve, 3s., broad, 2s.; Beet, Red, per doz., 1s. to 2s.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 8d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 4s.; Cucumbers, each, 4d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 4d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 4s. to 6s.; Button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 9d. to 1s.; Potatoes, per bushel, 3s. 6d. to 5s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsify, do., 1s. to 1s. 6d.; Scorzenera, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, 4d. to 8d.; Vegetable Marrows, per doz., 1s. to 2s.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

HORTICULTURE IN BELGIUM.

It is a matter of some notoriety that the present condition of horticulture in Belgium is one of the most advanced and flourishing of any country in Europe. Except, perhaps, in France, there is no other country in which the various branches of gardening are cultivated on an extended scale with an equal amount of intelligence, perseverance, and success. The causes which have led to this prosperous state of things are enumerated at length in a report recently addressed by M. Baltet to the French Minister of Agriculture, of which we purpose to give a brief summary. Belgium is one of the most densely populated countries in Europe, the census showing an average of 15,568 individuals to every square myriamètre (a little over 6 miles square); while in France the same area contains not more than 6,830 persons. With the exception of a few large manufacturing towns, the great mass of the inhabitants live directly by the cultivation of the soil; and the general prosperity of those who have devoted themselves to horticultural pursuits is mainly to be attributed to the following excellent national institutions:—

1. The State Schools of Horticulture, which afford young men such a course of instruction as fits them for positions requiring ability, and insures them good prospects in the pursuit of their profession.
2. Horticultural Conferences, patronised by the State, and by the local authorities.
3. A Federation of Horticultural Societies, the object of which is to centralise their various elements of strength and knowledge, for the more effectual dissemination of useful information on every point of interest.
4. Horticultural Instruction in the normal schools.
5. Botanic Gardens, as a means of scientific and popular instruction, by the exhibition of exotic plants naturalised, and the preservation of indigenous kinds.
6. Horticultural Journals.
7. The "Workmen's Order of Merit," or Decoration, intended as a reward for superior intelligence and industry, and as a stimulus to further exertions in the fields of labour and of duty.

The school of Practical Horticulture at Vilvorde was founded in 1849 under the auspices of the Government. The course of instruction given comprises every branch of gardening, ornamental and otherwise, fruit culture, forestry, and the forcing and common modes of growing vegetables. It extends over a period of three years, and the programme is so arranged as to form a complete and methodical course of study in all the subjects mentioned. At the end of this time the pupils present themselves for examination, and those who pass creditably receive diplomas or certificates of ability.

Another School of Horticulture was founded in 1849 in the establishment of Mr. Van Houtte, at Gendbrugge-lez-Gand. The attention of the pupils here is chiefly directed to the various branches of higher-class gardening, the management of plant houses, and the cultivation of ornamental plants. At the same time practical gardening of a more purely utilitarian character is not neglected, but at the present time shows a marked tendency to advance hand in hand with the more artistic studies. The course of instruction here also reaches over a period of three years. Every Saturday the pupils present notes of the work done by them during the week, which are read over in class, and commented on by the attendant professors. The pupils wear a uniform which, according to the rules, they cannot exchange for any other dress when they have occasion to go outside the precincts of the school. The charges are exceedingly moderate; board, lodging, instruction, and all other necessities being supplied for the sum of £24 per annum.

The Horticultural Conferences or Meetings are a very powerful means of spreading a knowledge of the best modes of culture, and of increasing the number of amateurs. They were commenced by M. Pierre Joigneux, and soon became

popular. Public conferences were first opened in the State Horticultural Schools, and then successively at Liège, Thuin, Anvers, Gand, Verviers, Namur, and Duffel. Since 1861 the direction of these conferences has been entrusted to eminent professors, most of whom have distinguished themselves by their writings on horticulture. Up to the year 1864, 547 of these conferences on agricultural and horticultural matters had been held in Belgium.

In the year 1858, M. Rogier, the Minister of the Interior, made an appeal to all the Horticultural societies scattered through the country to form themselves into a Federation or general association for their common benefit. This invitation was at once responded to, and the advantages to horticulture which have since resulted have been very great. As an instance of the encouragement given by the Government to this movement, it may be stated that the inter-correspondence of all the societies is exempt from postal charge, while plants for exhibition are conveyed on all the lines of railway free of charge, with the exception of the trifling duty exacted by the revenue officers on the amounts usually demanded for transmission. It may be mentioned that in Belgium all horticultural catalogues and circulars are also exempt from postal charges, a privilege which has been for a long time enjoyed by the French cultivators as well.

W. M.

ORIGIN OF THE NAME HORSE CHESTNUT.

THE following curious derivation of the name Horse Chestnut (*Esculus Hippocastanum*), as well as the fact giving rise to it, may possibly be as new to the readers of THE GARDEN as it was to me, particularly as neither Loudon in his "Encyclopædia," nor any French book on the subject, that I have seen, makes any mention of it. On examining, either with or without a glass, the mark left by the leaf stalk after its fall, a very distinct impression of a horse-shoe imbedded in the bark may be observed, bearing in relief seven dots, simulating the heads of as many nails. This mark assumes much more accurately the shape of the horse shoe on the twigs of last year's growth than on older wood. This derivation seems much less "far-fetched" than the two following, given by Loudon:—"It is said by some to be applied ironically; the nuts, though having the appearance of Sweet Chestnuts, being only fit for horses; and by some others, because the nuts are used in Turkey for curing horses of pulmonary diseases." If fit for any animals, Horse Chestnuts are more likely to be called only fit for pigs. First, because the irony would be so much the greater; and, secondly, because horses do not eat them willingly. As to their use in the medicinal line, it is possible that Turks, being no great doctors, may administer them to consumptive horses, but they can hardly be of much use in lung complaints, as their only medicinal property recognised in civilised pharmacopœia is that of a tonic, and, as such, the tincture of Horse Chestnuts is sometimes given for gastralgia. The oil of Horse Chestnuts was, a few years ago, greatly puffed up in Paris as a cure for gout; it was applied externally, but was of little or no use, and is now considered merely as a quack medicine. Starch seems to be the best product of these nuts, but somehow the manufacture of it has never paid in this country, although Horse Chestnuts may be had almost everywhere for the mere gathering. Like Cassava (or Manioc) and many other feculent roots or nuts, repeated washings and triturating will rid them of their bitter and acrid principle, leaving the fecula in an eatable state; the only question being that of the cost of the labour required for these operations.

Versailles.

FREDK. PALMER.

Royal Botanic Society's Anniversary.—At the annual general meeting of the Royal Botanical Society, on Monday, the council congratulated the fellows on the fact that since the last anniversary meeting the progress which had characterised the operations of the society during the last few years had been maintained. The number of new fellows elected during the year was 114, being an increase of ten above that of last year; few resignations had occurred. The total number of fellows and members at the present time was 2,502, the largest on the books of the society since its commencement. The total amount received in subscriptions was £250 in excess of that of last year, and considerably above the average of the last few seasons. From the auditor's report it appeared that the total receipts for the year, including the balance of £529 from the previous year, amounted to £13,434 6s. 11d., and the payments, exclusive of the balance in hand, £2,170 9s. 4d., to £11,263 17s. 7d. The report of the secretary was also read, and was equally satisfactory with the other reports.

NOTES OF THE WEEK.

— THE remarkably fine, and as yet scarce, *Anchusa capensis* is coming into bloom in Mr. W. Bull's nursery at Chelsea; and near it is, in full flower, the remarkably distinct *Gladiolus purpureo-auratus*.

— DAMPIER'S Glory Pea is now blossoming freely in the open air at Messrs. Veitch's. The plants have been in the open air about ten weeks, and were raised rather late. It ought to be more frequently seen in our flower gardens and rock gardens than it is.

— *GLADIOLUS SAUNDERSII* is just now in flower on the rock-work at Kew. Its large, vivid scarlet flowers, though borne on a lax comparatively few-flowered spike, are very effective, the interior of the blossoms being speckled like *Hippeastrum pardinum*. The foliage is glaucous, and not unlike that of its congeners.

— A NEW method of propagating *Ipecacuanha* has been devised in India by Mr. Jaffray, and promises to be of great importance. It simply consists in striking the leaves upright in pots. These produce roots and the most superficial of these eventually produce buds.

— A GOOD many seedling varieties of orange-scarlet and other Begonias are now flowering abundantly at Messrs. Veitch's in the open air. One of the finest of these has been out of doors two winters. The best of these Begonias will probably make capital border and bedding plants in the warmer districts.

— AS regards bathing facilities in the parks, it is understood that if the estate of the late Mrs. Brown, of Hertford Street, goes to the Crown, notwithstanding the claims of alleged heirs, that lady's purpose, at the time she died, to expend a large sum in providing baths on an extensive scale in the parks, the plans for which were approved of by Her Majesty, will be carried out.

— THERE is a batch of the new and prettily-coloured *Cypripedium Sedeni* now in good flower in the Royal Exotic Nursery, Chelsea. This valuable kind is a hybrid between *C. Schlimmi* and *C. longifolium*; and another batch is expected to blossom daily in which the cross is reversed, *C. longifolium* being the mother parent in this case. These very interesting hybrids were raised by Mr. Seden, of Messrs. Veitch's nursery, a pupil of Mr. Dominy's—the greatest of our hybridisers as far as Orchids and *Nepenthes* are concerned.

— NOTWITHSTANDING the unfavourable season, the fine-leaved plants in Battersea Park are now in very fine condition. We trust that visitors to the interesting sub-tropical garden will not be induced to imitate the many obvious errors in garden design there to be seen. We allude to the awkward jumble of beds of all sorts and sizes in one spot; to the abrupt railway-like grading of the banks, to the irregular ribbons of shrubs, and to the awkward-looking backs on which many of the beds are placed.

— THE Corporation of Sheffield have resolved to purchase the estate of the late Miss Harris for a public park, under the conditions laid down by the executors of her will, one of which is that no alcoholic liquors shall ever be sold on the property, or houses for their sale erected thereon. The price agreed upon is £15,750. There is an old mansion on the ground, which it is suggested should be devoted to the purposes of a museum or a picture gallery.

— THE scandalous neglect of the opportunities which all our London parks offer for making convenient open-air bathing places is now more evident than usual. Every evening thousands of ragged youths congregate on the banks of the Serpentine waiting for the signal to bathe at half-past seven. For some time after this hour, the already filthy water is as thickly crowded with "featherless bipeds" as many a sea-pool with shrimps. There is no bathing place in any of our wide West-end parks but this, and during the whole of the long sunny day—from eight in the morning till nearly eight at night—the hours in which bathing is most enjoyable, it is necessarily prevented here. The wonder is, that with our vast extent of park grounds, offering admirable sites for the formation of shrub-and-tree-curtained bathing places, nothing whatever is done. It can scarcely be from want of means, as these seem to be so ample now for providing our parks with less important things than bathing places—the villages of glass-houses, for example, which are growing up in Hyde Park and Battersea. Free open-air bathing places, open at all times, and properly screened with a belt of plantations, would be the greatest boon which the parks could furnish to the people of London. There is no convenience of any kind on the banks of the Serpentine, so that between the water, filthy from all London crowding here, and the equally filthy banks, thousands are prevented from practising an art which conduces so much to health and wholesome pleasure and cleanliness, and which is more important for the population of large towns than any other exercise. The making of bathing places in our parks need be attended by no difficulties worth naming, and these, if judiciously placed and planted round, would not interfere with the uses of the parks or lessen their beauties in any way.

THE ROSE HARVEST.

OF late years Roses have become to many a continual feast. The year is girdled round with a garland of Roses. They add to the riches of our Christmas cheer; they welcome, with their glad some beauty, the new-born year. But the majority of mankind have as yet but one Rose harvest; it is reaped throughout the month of June and the first weeks of July. Seldom has it been richer and fuller than this year. The late wet spring but pushed the impatient Roses back. Unless in unfavourable positions, it hardly injured them—nay, perhaps it did them good. It steadied their growth, and secured time to develop size, lay on substance, elaborate colour and fragrance, and mould them into form. The flower-buds grew into beauty under the genial showers; they were drawn out at express speed by intense sunbeams, and the later flowers were hurried out of blossom with unusual speed. Shade is almost as essential to late Roses as direct sunshine is for early ones; and, by the wise use of sun and shade at the right season, the glories of the Rose may be prolonged. For instance, *Maréchal Niel* leads all the other Roses. There is none so early as he. On a south wall he unfolds his golden flowers early in May, and the earlier he comes the finer the flowers. The sun takes the substance, colour, and even the fragrance out of this glorious Rose. But, early in the season, each bloom is distinguished for size, colour, substance, and odour; and it is by far the largest, as well as the most glorious, of all yellow Roses, not forgetting even *Baroness Rothschild* or *Marie Baumann*. But, as the sun strengthens, the *Maréchal* melts away into a shadow of his former self, unless it be a chance flower on a brier in a shady place, or a plant against a north or east wall.

In Roses it is not needful to be off with the old love before we are on with the new; we may love all—old and new. Therefore, while well nigh adoring the *Maréchal Niel*, I still cling with passionate devotion to the *Gloire de Dijon*, which has perhaps seldom flowered better than it has this season. There are also the charming *Madame Falcot* and *Safrano*, and no lover of yellow or golden Roses should be without *Triomphe de Rennes* and *Celine Forestier*, the latter, for usefulness, beauty, profusion of bloom, and sweetness, standing third in my list of golden or yellow Roses. And now I wish to bow low to the *Baroness Rothschild*. She has been glorious this season in form, size, substance, and exquisitely-delicate colour. The *Baroness* has but one fault—she does not stand up, but, on the contrary, almost sits among the leaves and branches. *Miss Ingram* has also been unusually fine this year, while *Boule de Neige* is the most charming white Hybrid Perpetual for bouquets and button-holes of all the Roses grown. *La France* has been superb—immense masses of a delicate colour that we hardly find in any other Rose; and, although thin and somewhat loose when fully expanded, it is most perfect in form when in bud and opening. *Peter Lawson* promises to be almost as useful among dark Roses as *Charles Lawson* is among pink varieties; the latter and *Coupe d'Hébé* have been our most useful Roses for cutting this year, and for vase or bouquet work hardly any two Roses can match these when in bud. *Souvenir d'un Ami* has excelled even itself this season among Teas, and I have seen one flower of *Homer* of the most perfect form, with the upper part of the petals more or less crimped, and suffused with deep colour, melting into almost a white at the base. Now is the time to take measures to secure a second bloom of Roses, or rather had these measures been taken sooner, that bloom might have been made almost continuous throughout the summer and autumn months. The secret of continuity of blooming is incessant picking and stopping. As soon as a flower fades pick it off. When all the flowers of a branch have bloomed, cut it back to the strongest bud. It will push at once, and that branch may be in flower a second time before the last flower on the tree or bush has faded. But of course this continuity of blossoming makes heavy demands upon the plants; these must be met by liberal top-dressings of malt-combings or manure; and, where the sight and smell of it are not objected to, house and stable sewage are also admirable helps, if not applied too strong. Only by a stimulating régime and planting in rich, deep, strong soil can any Roses be forced to merit their title of Perpetuals.

D. T. F.

THE ARBORETUM.

KELREUTERIA PANICULATA.

THIS highly ornamental deciduous tree is a native of China, and was introduced into this country about 1793. It flowers abundantly in June and July, the yellow blossoms being succeeded by large inflated capsules, which adhere to the tree until late in autumn. It does best on a warm well-drained soil, in a sheltered situation; and, though rather irregular in growth, it forms a useful addition to our pleasure-grounds or arboretums. Though one of the most interesting of all small trees it is not so commonly met with in collections as it should be. A fine specimen of it may be seen in the Royal Gardens at Kew, and it is also well represented in Messrs. Veitch and



Kelreuteria paniculata.

Sons' nursery at Coombe Wood. A nice specimen of it also existed at one time in the arboretum of the Royal Horticultural Society, at Chiswick.

TREES AT ARUNDEL.

WHAT beautiful and noble examples of trees often lie hidden away in the country, scarcely noticed even by the residents! And how many more, of similar character, do we find in the gardens and private pleasure grounds of the aristocracy of England! Could they be reckoned up and deservedly described, we should have an "Arboretum" as large again as Loudon's famous one. Often as I have been struck by the seclusion and excellence of such trees, never have I been more forcibly reminded of the fact than while at Arundel a few weeks ago.

I wish to speak at present more particularly of one or two trees it was my good fortune to see there, and specially of a couple of Paulownias, one in the grounds of Arundel Castle—the ancient and princely seat of the Duke of Nor-

folk—the other in the garden behind the house occupied by Mr. Constable. With the usual appearance of the Paulownia in the southern counties, most readers of THE GARDEN are of course familiar; but there may be others in the north to whom it is scarcely known. For the sake of the latter I may say, that it was introduced from Japan in 1840, and that in general appearance it resembles the Catalpa, though in habit more robust. Like the Catalpa, too, it is deciduous, and quite hardy. The leaves are very large, many inches across, roundish cordate, pointed, and often provided with several strong lateral angles. The flowers, produced in abundance, are borne in erect and terminal panicles, fashioned like those of the Horse-Chestnut, but by no means so dense, and individually bear a considerable likeness to those of the Foxglove. The lobes, however, are very much larger, and semi-circular, so that we are strongly reminded again of the flowers of Bignonias. The short calyx is covered with tawny fur; the corolla is a deep yet lively violet or lilac-purple; the stamens are didynamous; the ovary and long white style remind us, in their external figure, of the capsule of the Mahogany tree. The resemblance of these showy flowers to those of the Foxglove consists not merely in general look, the Paulownia and the Digitalis being members of the same natural order—the Scrophulariaceæ—and illustrating, in a capital manner, how a type of structure which pertains even to certain insignificant weeds of the same family (the smaller species of *Linaria*, for example) may be repeated, at the other extreme, in a splendid arborescent plant. It is well to let the mind dwell, whenever practicable, or whenever opportunity offers, upon facts of this character; the hardest bit of self-teaching, and therefore the most useful and enjoyable when accomplished, being quickness to appreciate Nature's endless variety in unity—recognising the air, though it be played in a thousand different keys. Well is the noble plant under consideration dedicated to a princess of all the Russias, and well does it deserve the epithet of Imperialis. The flowers, it should be added, are fragrant, a circumstance far from frequent in connection with their peculiar colour.

Unfortunately, the season at which the Paulownia blooms is so early, that in England, unless the conditions are exceptionally favourable, the flower-buds get destroyed by the frosts which frequently prove so ruinous to newly-set fruit. They are generally inclined to open rather earlier than the leaves, and it is often quite a pity to see how rapidly they advance, considering what we know from experience they have yet to encounter. If the wood of the previous year has been tolerably well matured; if the winter has been mild; if the spring of the current year be somewhat late, so that blooming is delayed till June, or even till midsummer; and, finally, if the weather be warm and dry when the time arrives for expansion—then the tree has a good chance, and a fine display of the glorious purple may be looked for, especially in sheltered situations near the sea. Otherwise the little brown knobs of fur detach themselves from the stalk, and drop away prematurely. A tree upon the lawn at Vellore, the residence of the Rev. Mr. Kemble, rector of Bath, was covered with flowers in 1866, and another, the same year, at Messrs. Waterer's Knap Hill, Woking, on which every point had its panicle of blossom. The tree last referred to was then about twenty-five years old, about 20 feet high, and had not flowered before. At Maidstone, with Messrs. Bunyard; in the grounds of the Bishop of Exeter, Bishopstoke, near Torquay, and in many other places, the Paulownia has likewise blossomed well, though intermittently; but at Clevedon, where I have several times seen Pomegranates hanging upon the tree out of doors, and quite ripe, and where the female of the *Garrya elliptica* ripens its curious grey-purple, and downy berries every autumn, I believe it has still to disclose its charms. The buds make considerable way, but drop before expansion, as I have likewise observed at Clifton. But of course trees may have bloomed both at Clevedon and in Clifton, in gardens secluded from public view, or to which I have not had access. The tree is evidently one of rapid growth, and is a grandly decorative object in its foliage alone. When branches have been lopped off, it is apt to throw up stout, erect, and leafy shoots 6 feet in length, and considerably thicker than one's finger at the base. Near Manchester I

have not yet seen it. A coloured drawing of the flowers is given in the *Botanical Magazine*, pl. 4,666.

In 1873 the conditions for the blooming of the Paulownia were again highly favourable, at all events as regards the current season, so that, when at Arundel during the first week in July, I found not only the foliage well developed, but the flowers in the very pride and perfection of their splendour, though beginning to fall fast, and thickly sprinkling the turf below. The first I had the opportunity of observing was the tree in the grounds adjoining the Castle; but the finest of the Arundel trees is unquestionably Mr. Constable's. The last named was planted about thirty years ago, very shortly after the tree had first become known in this country. In its tallest part it is now about 36 feet high, and the lateral spread is 17 or 18 yards. A little way above the ground, the circumference of the trunk is no less than eight feet. Two feet higher, the circumference is six feet and an inch; and at the height of another foot, say not much more than a yard from the surface of the soil, the circumference is still six feet. It will be interesting, when necessary to cut down some large Paulownia (not this magnificent Arundel tree, my account of which I would close after the manner of the list of English monarchs in the chronological tables, which finishes with, "Whom God preserve!") it will be interesting, I say, then to observe what is the texture of the wood and the nature of the annual rings. Probably they will not be unlike those of the Poplar. On measuring one of the largest of the leaves, an outline sketch of which now lies before me, it was found to be 24½ inches from base to apex; of course not including the petiole, but taking the lamina alone, and at the part of the latter where the upper pair of angles gave greatest, though by no means over-predominant, width, it was no less than 22½ inches across. To stand in the presence of a tree like this, after making all allowance for rapidity of growth, which, in the case of the Paulownia, reminds one of the uprise of a Palma Christi (Jonah's "gourd," if the *savans* be right), seems to me no slight privilege; and when majestic Conifers rise on every side, in addition to the absolute good qualities of each, the contrast becomes exceedingly effective. Those, at least, can appreciate it who have read Mr. Ruskin on the "Trees of the Spear," and the "Trees of the Shield." The grounds in question contain some of the handsomest trees to be seen anywhere in the county of Sussex, all presenting, moreover, a complexion of freshness and of charming constitutional good health that is excelled probably neither in Sussex nor in any other part of England. The curving avenue or double line of Deodaras is particularly imposing, though, individually, some of the other Conifers excel them. The trees composing it were raised some thirty years ago, from seed sent direct from India to the Duke. On receipt of it, Mr. Wilson, the gardener, at once prepared a pan of earth and silver-sand, and, in the kindly manner so characteristic of him, unwilling to keep the whole of any pleasure to himself, deputed the actual sowing of the seeds to Mr. Constable's son, George Sefton, who now, accordingly, is able to look upon these noble trees with the same paternal pride with which another good friend I know of, every morning, when he rises, regards his Chestnuts and Walnuts—the outcome of a similar early love for trees, and the sevenfold exemplary and useful art of rearing them. I question if it be possible for a man to command a pleasure in every way so thorough and unalloyed, so pure, blameless, and easily procured, as that which he possesses in the contemplation of stately trees—if they be fruitful ones so much the better—that, but for his handiwork, would never have existed, and which he has watched from the seedling onwards and upwards. He is at all events beyond the reach of the small creatures whose resource is to throw darts at what is better than themselves. Whatever fault may be found with a building, or a book, a statue, or a picture, trees, happily, are secure alike from jealousy and the cavils of ignorance. He, moreover, who in his childhood plants trees, provides not only a personal pleasure for his own maturer years, but makes the world richer than he found it, a good that any man may be proud to achieve; and no slight thing is it to be able to look round, when the sun is moving westwards, and feel that though one's name may slide away and be forgotten, what we

have done, or have essayed to do, so that the work was faithful, and though the act may have been no more than the planting of some Paulownias and Deodaras, will excite gratitude in a thousand hearts that are yet unborn, and perhaps inspire a thousand more to go and do likewise. I would rather by far be the unknown or forgotten originator of a hundred Oaks that shall help to make my country glad and beautiful, than have it recorded of me that my will was proved "under a million," and leave no memorial besides.

The picturesque scenery of the neighbourhood of Arundel renders the place well worth a few days' visit. Those sweet, airy, wavy, far-spreading downs, allowing every now and then of a peep at the Channel, are delightful not only to the simple tourist but to the scientific botanist, for here grow wild the Sweetbriar, the Belladonna, the Musk Thistle, the Golden Oat-Grass, and many another pretty favourite and curious rarity; under the Beech trees, for example, that most singular parasite, primrose-coloured in every part, the *Monotropa Hypopitys*; while in the hollows, in some parts densely wooded, we are reminded of the fabled country of the Lotos, since we desire to depart not. Littlehampton, four miles distant, is an agreeable watering-place, some day to become important, and again prolific in botanical curiosities; while, upon the quiet hills beyond Warningcamp, the fruitful residence of Mr. G. S. Constable, grow the Bee-orchis, the Fly-orchis, and that lovely *Orchis pyramidalis*, all in profusion; and in the woods *en route* thither, the *Listera Nidus-avis*. The hospitality of the Arundel people is on a par with the pleasantness of their abode; and shapes one's farewell into *Hec meminisse juvabit*.

L. G.

MAGNOLIA GRANDIFLORA.

WHAT is the best kind of soil in which to plant this fine Magnolia? I have tried several kinds of compost, but have not yet succeeded so well as I could wish.—J. T. P. [Upon putting this question to Mr. James Barnes, who has had great experience in such matters, he kindly furnished us with the following reply:—"The best soil I could ever discover," says Mr. Barnes, "for maintaining *Magnolia grandiflora* in vigorous health for many years is a rich friable open sandy loam, and if it can be easily obtained turfy and fibrous, so much the better. If loam only of a marshy or stiff texture, or of a heavy close quality, can be readily obtained, add to it one-fourth of good open peat or heath soil, and a good portion of sharp clean river sand, road grit, or small clear shingle stones; incorporate and mix well together, exposing it for a time to the sun or frost. In such a mixture, placed from 2 feet to 3 feet in depth, the *Magnolia grandiflora*, *M. obovata*, and *M. exoniensis* will all grow well. Of these the last, in my opinion, after fifty years' observation, is the best, and flowers by far the freest of the whole family. *M. angustifolia* is also very beautiful; and *M. præcox*, *M. lanceolata*, *M. ferruginea*, and *M. glauca* are all noble plants, and placed on a good body of the foregoing mixture they will all grow luxuriantly and vigorously for many years, and will become noble trees. To induce them to bloom freely and for a long time, treat them as you would a Fig tree, in order to keep it in full fruit all the summer, i.e., just rub out or pinch out the point of every young shoot as fast as they are made to the extent of three or four eyes, or four or five eyes, if the shoots are very robust. Continue to practise this the whole season through, and abundance of blossom will be the result. Stopping the shoots gives a quiet check without disfiguring the tree, provided the young foliage has not been touched or lacerated by the finger or thumb."]

A Remarkable old Elm.—As you are taking note of remarkable trees, may I be allowed to mention an Elm, which many of your readers may remember to have seen. The tree to which I allude formed, until a few years ago, a peculiar feature in the appearance of Bonchurch, in the Isle of Wight, and was frequently conspicuous in photographs of the place. It grew on the opposite side of the road to the pond, and one huge bough formed a perfect natural archway across the road, at a height of nearly 100 feet above it. A gale of wind one night, in 1866, brought down this Elm and many other noble trees in the island. Its height from the road was increased by its position on a summit of a bank, and, in its fall, it completely blocked the road, snapped a lamp-post on the other side, and made a gap of considerable width in the wall skirting the pond. It measured at the base near the ground 16 feet in girth, and within an inch of 23 feet at a distance of some 10 feet from the ground. The height of the tree was about 90 feet.—H. W. M.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

ACER TRIFIDUM (THE TRIFID-LEAVED MAPLE).

THIS forms a very neat small round-headed tree, from 15 to 20 feet high, with spreading branches and very slender, smooth, bright green shoots. It is a native of Japan, is quite hardy, and was first introduced in 1868. The leaves are small and three lobed, with the side lobes widely extended, slightly rounded or square at the base, deep glossy green above, pale and glaucous beneath, quite smooth on both surfaces, and on long and very slender footstalks, of a reddish colour; lobes oval, acute pointed, nearly equal in size, and either entire or irregularly furnished with a few small blunt serratures on the edges. Flowers small, and in dense terminal corymbs. Fruit or keys rather small and smooth, with thick carpels and long wings a little separated and parallel. The length of a full-sized



A. trifidum.

leaf is from $2\frac{1}{2}$ to 3 inches, including the footstalk, which is about $1\frac{1}{2}$ inch long, and the breadth is from $1\frac{1}{2}$ to 2 inches.

Summer Torch Pruning.—This is a simple method of shortening lofty and rambling side branches, such as those of the Wych Elm, that are inaccessible for other methods of pruning. It often happens in forest management that if we could only get at certain branches, to curtail their extremities, the tree itself might be spared for some years longer. It would not be injurious to any more valuable neighbours for some time, if only we could amputate or blight the ends of certain rambling side branches. Now, that which we cannot do by means of ladder and saw, nor by long-handled French shears, nor mount to by anything short of a scaffolding, may easily be effected from the ground by means of a long Bamboo cane with a torch affixed to its tip, upon a continuation of stiff wire for the last half-ell. The present season of midsummer is the time at which to operate. The torch is merely a bunch of cotton or linen rags dipped in oil. By means of it we can easily shrivel up, blight, and destroy the foliage for over 20 or 30 or more feet at the extremity of a side-branch, although it may be 30 or 40 feet above our heads. In the following spring such extremities will be seen to be either quite dead or nearly so; and the lateral advance of the offending limb of the tree will have been effectually checked. The reader will understand that I am speaking of the woodland or forest, where a dead twig is no eyesore; I am not speaking of lawn trees; Wych Elms and Black Italian Poplars are, above all, fair subjects for this stringent igneous treatment.—RALPH CARR ELLISON, *Dunstan Hill, Durham.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Cupressus Goweniana glaucescens.—A new variety, raised by M. F. Sahut, of Montpellier, far finer than *C. G. glauca*. It is particularly distinguished by its large, fleshy, and flattened branches, as well as by the characteristic glaucescence of all parts of the plant, which has a hoary blue tint very rare in Conifers. This variety is so different from the type or parent (*C. Goweniana*) that it cannot be said to resemble it in any respect.

Street Trees.—Corroborating our often repeated recommendations to plant trees in the wider of the London streets, we learn from the *Daily Telegraph* reports from its correspondents at our "sea-side resorts" that,—"During the present hot weather the foliage in the streets, which forms a special feature of Eastbourne, has been found a very agreeable shelter;" and it adds greatly to the beauty as well as to the comfort of that pleasant watering place.

Labels.—What do you consider the best label for ornamental trees out of doors? Wood quickly rots in our moist climate, and zinc corrodes.—J. S. S., *Helstone, Cornwall.* [For large trees, a piece of painted tin nailed on the bole; for shrubs and small trees, of which the bole cannot be approached, from the branches spreading low, cast iron T shaped labels inserted in the ground. The whole subject is treated of at great length, and the best kinds are figured in *THE GARDEN*, vol. i., p. 156.]

THE PROPAGATOR.

BUDDING ROSES.

AUGUST is one of the best months in the year for budding Roses. Buds may be inserted in September, but not with so much certainty of taking as in July and August. During these months buds can be secured plentifully, and the briers are generally in full vigour. As a rule buds are ready for use when taken from a shoot that is in bloom or just shedding its petals; if not taken at that time, the buds soon begin to grow, and are of no use. To get easily at the shoot intended to be budded, young beginners, in some cases, actually cut off all the laterals extending beyond the bud, and do not leave a shoot to draw sap. If asked why they have cut off these portions of the brier shoot after inserting the bud, their reply is that they thought the sap would be directed to the bud, and that the work looked more tidy and finished. They, however, make a great mistake, and do not understand what the effect will be after they have stumped off all the laterals and principal lead. After a bud is inserted the laterals must be allowed to grow freely, in order to draw sap past the bud until it is firmly united, which will be in about a month or six weeks, according to the vigorous state of the brier or otherwise. After a Rose is budded a tally should be fastened to the stock with some thin copper wire; the date and name of the Rose should be written thereon, thus: "15-7, Duke of Edinburgh." On looking at the tally, the exact day on which the buds were inserted can be ascertained. This plan is far better than trusting to memory. In some few cases the brier may be growing so vigorously that it is necessary to cut back a few of the laterals, as there is danger of the shoot breaking by high winds; but care must be taken not to cut away all the leading shoots beyond the bud, and this operation must never be performed until about three weeks or a month after the bud is inserted. Another cause of frequent failure is taking off the ligatures too soon. If the ligature is cutting into the bark, unfasten it, but tie up again immediately a little easier. Many buds, when released too soon from the tie, will fly out; the safest plan, therefore, is to keep the ligatures on for about two months, easing them occasionally if necessary. About the third week in November, not earlier, the whole of the growth beyond the bud must be cut in—that is to say, the laterals or side shoots—leaving the shoot with the bud in it about 8 inches long. If this operation is not performed, there is great danger of the branches breaking during the winter with the weight of snow falling on them. When cut in the manner described, the weight of snow lodging on the branches is a mere fraction.

About the first week in April prune the branches to about 3 inches beyond the dormant Rose bud; the Rose will soon after commence to grow. It is not wise to cut close up to the bud, as some do, until the Rose has grown 2 or 3 inches and made a few young leaves; then you may safely cut close to the bud. About twice a week go over the stocks and rub off every shoot, in order to direct all the sap to the young growing Rose. Any suckers appearing must be grubbed up at once; it is astonishing what damage a sucker can do to a young growing Rose tree, therefore exterminate them as soon as you see their red tops peeping out of the ground. When the Rose shoot has grown 3 or 4 inches high, light sticks (which are best made from split laths) about 2 feet long must be firmly tied to the brier stock; these should stand up above the Rose about 15 inches.

In the months of May and June the Rose grows so rapidly as to want supporting, and it will be found necessary to tie the Roses to the supporting stick at least once a week, in order to save them from being blown out by sudden gusts of wind. Worst of all is better than bast matting, for tying the Roses to the supports, as it does not perish in winter, but holds all firm until pruning time comes round in the spring. I have often been asked the following question by young Rosarians: Suppose in the spring, having two buds inserted into a brier, one of them commences growing and the other remains in a dormant state, what step would you take to start the dormant bud into growth? In such a case practice proves that the shoot containing the dormant bud must be pruned nearly close to the bud, and at the same time, after the started bud has grown 5 to 6 inches high, nip out its top; then the sap will be directed to the dormant bud, and in nine cases out of ten it starts into growth, and both shoots grow away together pretty equally. Many young amateurs have a great notion of having two or three different coloured Roses growing into one stock. I have tried the experiment often, but never yet found it to answer satisfactorily. I can only compare the idea to two or three different families trying to live comfortably in one house. They do not agree; no more do the Roses. There is a continual strife going on for the mastery. One of the Roses budded has probably a stronger habit of growth than the other, or it may be a grosser feeder; it draws more than its share of sap from the brier,

and starves the other Rose into a sickly and unhealthy state, until it finally dies. If the amateur wishes to produce the effect of a red Rose and a white one growing from one stem, he can do so by planting two standards into one hole. Tie both stocks together to a good firm stake. The heads will grow into each other, and the effect is produced at once. He can plant two standards together of what colours he fancies. So much has been said and written about budding that but little can be added. During the past ten years I have seldom taken the wood out of the shield of the bud. I find that buds take just as freely with the wood in as when it is taken out. I cut the shields with a bud in the centre very thin, the shield seldom being more than about half an inch in length. Your knife must be as sharp as a razor; buds out with a blunt knife will never take freely.

French propagators of Roses do not take the wood out. What the English people call budding they call shield-grafting. If young Rosarians will cease to pull and tug at the wood under the bud, often bruising and injuring it, often pulling the eye out with the wood, they will succeed much better.

Choose buds that are well developed. Sometimes the amateur wants to bud a particular Rose, but the buds can scarcely be seen. If he will cut two or three inches off the top of a nice shoot, the buds will be well up and fit for inserting in about a week or ten days at the most; this is a practice I often have to resort to. More particularly, let the varieties if intended for standards be of a good growing habit. Roses with dwarf habits never do well on a tall 4 feet standard; such Roses should be budded on briers from 1½ feet to 2 feet high. For the guidance of amateurs, I give the names of some of the best Roses out, all of which grow freely, and make good heads when worked on briers from 3 to 4 feet high:—John Hopper, General Jacqueminot, King's Acre, François Fontaine, Pierre Notting, Gloire de Dijon, François Louvat, Alfred Colomb, Duke of Edinburgh, Alpaide de Rotalier, La France, Richard Wallace and Etienne Levet, both new; Auguste Rigotard, new; Baroness Rothschild, Beauty of Waltham, Baronne Haussman, Charles Le-fevre, Charles Rouillard, Caroline de Sansal, Comtesse de Chabril-land, Docteur Andry, Duc de Rohan, Dupuy Jamin, Edward Morren, Emilie Hausburg, Felix Genero, Gloire de Santenay, Jules Margottin, Jean Rosenkrantz (makes a noble head and is very hardy), Kate Hausburg, La Duchesse de Morny, Lord Macaulay, Marquise de Castillane, Madame Charles Crapelet, Madame Boutin, Madame Fillion, Madame Victor Verdier, Madame Rivers, Madame Anguste Verdier, Mademoiselle Margaret Dombain, Annie Wood, Maurice Bernardin, Marguerite de St. Amand, Marie Baumann, Nardy Frères, Prince Humbert, Princess Mary of Cambridge, Senateur Vaisse, Thyra Hammerich, Vicomte Vigier, Vicomtesse des Cazes, Victor Verdier, Ville de Lyon, Xavier Olibo and Monsieur Boncenne (both very dark), Madame Therese Levet. This list comprises only the best exhibition Roses which are good growers, but by no means exhausts it. There are many other beautiful Hybrid Perpetual Roses which are not suited for tall standards. The following Teascented Roses, relations of Gloire de Dijon, do well as standards, and they are hardy:—Belle Lyonnaise, Madame Levet, Tour Bertrand, and Montplaisir. Avoid budding weakly and dwarf-growing Roses; they never give satisfaction, and are always in a semi-decayed condition. After becoming a year or two old they cannot elaborate the quantity of sap emitted from the brier; hence innumerable suckers are thrown up to trouble you, and a perpetual struggle is going on during the growing season between roots and head which shall be the master.

There is one style of budding which I adopt occasionally, and which I call "running budding." We will suppose a new Rose of great merit in your garden; it is making one long shoot, and growing very fast in July; the wood is quite soft and unfit for working on the brier, but low down you see two or three fine plump buds which are ready. If I was to cut the shoot down I should sacrifice a large number of the buds. In such a case I adopt the following plan:—I pick out a nice brier, rub the thorns off, and prepare it for receiving one or two buds, as the case may be. I make the incision, raise up the bark, and place the loose tie on the brier. All being ready to perform the operation quickly, I run to the Rose shoot and cut off the bud; I again run back with it to the brier, which is gaping to receive it; the bud is inserted and tied up as rapidly as possible. The distance sometimes is from thirty to forty yards, and you have to run and insert the bud before it becomes dried up. In a few weeks more buds are ready for use, and the shoot may be cut down and the best of the lower buds worked. If I had not made use of the first buds, they would have grown out as laterals, and perhaps would not have ripened sufficiently for budding that season.

We live in an age of progress, and it is astonishing with what celerity thousands of young Rosarians have sprung up during the past few years, and no wonder, for working amongst the queen of flowers

is a delightful occupation. With what anxiety we look out for the postman every morning during the budding season, expecting a small paper box by the parcel post, filled with buds of some of the new Roses from a distant friend. During the months of July and August thousands of small parcels are sent by post containing twigs of Roses with well-developed buds, wrapped up carefully in damp blotting-paper, and laid in a bed of damp Moss placed in a paper or tin box. These are inserted into briers—they remain in a dormant or sleeping state. In the spring a resurrection as it were takes place, the buds begin to swell, beautiful tender leaves are produced of various shades, from red to crimson, and the Rosarian's heart warms with delight.

Such are a few of the pleasures enjoyed in the country by Rosarians. As it is not always convenient to insert the buds on the same day they are received, I may state that they can be kept quite fresh for a week or ten days in the following manner:—Fill a few 6 or 8-inch flower pots with sand, placing a few crocks and a little soil at the bottom of each pot; prick in the cuttings round the pot about 1½ inches deep, and about 1 inch apart, in a rather slanting position; prick in also a small wooden label with each lot (for sometimes two or three twigs are sent of one variety), containing the name of the Rose; place the pots in a cool outhouse or cellar, with light, but no sun; give a little water every third day. Cuttings kept this way are actually improved, as the buds become better developed. I have used them successfully ten days old kept in this manner. If you keep the cuttings in water, the buds turn black, and become quite rotten in a few days.—*Field*.

Propagation of "Climbing" Carnations.—I have some of these, but am at a loss to know how to propagate them. Will you kindly instruct me in the matter?—*JANE*. [What are called Climbing Carnations are best propagated by means of pipings placed on a gentle bottom heat and covered with a bell glass (kept perfectly airtight) and thoroughly well watered, without removing the glass. They will be found to be rooted in about three weeks after they have been put in. The best compost for them is light loam mixed with finely sifted coal ashes for drainage, which will be found better than sand. The shoots should be carefully tied out as they grow, to admit of their getting all the air possible; and the plants should be frequently syringed, and always kept well watered. As they bloom all the year round, it is advisable to turn them out of doors from June till September, plunging the pots in a shady place. At each shift the plants should be potted two or three joints deeper than they were before. This will make them last good for many years.—*JAMES BLACKLEY*.]

Pachyphytum bracteosum.—This is one of the most effective of all succulent plants, and just at this season a few words as to its propagation may be useful. Strip off its lower or best-developed leaves, and lay them for a day or two in the sun, after which they may be inserted in a well-drained cutting-pot or shallow pan, in a sandy compost, and well watered, to settle the sand firmly around them; after that they should be set on a shelf near the glass, where they will root freely in a week or two, and make nice little plants for planting out or growing in pots next summer. Many other succulents, such as Haworthias, Esterias, some Mammillarias, and Bryophyllums, may be propagated in the same way, but care must be taken not to give them too much moisture, so as to cause them to rot off instead of producing roots. The Pachyphytum makes a very effective edging plant for carpet beds, and has a striking silvery appearance. Its congener—*P. roseum*—may also be propagated in the manner just alluded to, and is equally useful for the same purposes.—*B*.

NOTES AND QUESTIONS ON PROPAGATING.

Propagating Hollyhocks.—When a good variety is obtained, it may be readily increased by division. The first season it should not be allowed to flower later than the end of August, but be cut down to about 9 inches from the ground, in order to induce the production of side-shoots. Being headed down early, the lateral shoots become strong before the winter sets in; whereas, if allowed to bloom the entire period, there would, in most cases, only be the bare stems, or a late production of very small side-shoots; and it would be almost impossible for them to withstand the inclemency of the coming winter.—*W*.

Propagation of Aristolochia Siphon.—As is well known to most gardeners, the propagation of this plant from cuttings is extremely difficult. In America, however, the following easy and successful mode of multiplication is employed. Well-ripened shoots of the preceding year are layered by pegging them down on the surface of the ground and covering them with 2 or 3 inches of soil. This is done early in spring, and the shoots thus layered are allowed to remain undisturbed until the succeeding autumn, when they will be found to have emitted roots along their under surface. They are then taken up, and cut into as many pieces as there are rooted portions, each of which, when replanted, forms a new plant.

THE INDOOR GARDEN.

CROTON YOUNGII.

MANY beautiful Crotons are already in cultivation, but this species is so extremely graceful in habit, and rich in variegation, that it deserves special notice. Our figure gives an excellent idea of its contour. Its leaves vary from 1 to 2 feet in length, and are rarely more than $\frac{3}{4}$ of an inch in width. Their upper surface is dark green, profusely blotched and tinted with pale yellow and rosy-red. This fine species was introduced by Messrs. Veitch & Sons, who received it from J. R. Young, Esq., of Sydney, in compliment to whom it is named. In cultivation it succeeds well if treated like its allies,

faintly rayed with carmine and margined with very long and finely-cut appendages.

DELPHINE.—Flowers large, fragrant, carmine when in bud; petals very broad, of a carmine-rose margined with carmine; throat rayed with carmine.

DOCTEUR GOLFIA.—Flowers very large, slightly fragrant, carmine when in bud; petals broad, of a deep vinous lilac, shaded with light purple; throat rose-coloured, white at the base, rayed with deep purple, and margined with long and finely-cut appendages.

EMILE SAHUT.—Flowers large, fragrant, carmine when in bud; petals very broad, of a bright rose-colour, with a slight vinous tinge; throat deeper rose, rayed with carmine.

EMILIE.—Flowers of medium size, of a delicate rose-colour



Croton Youngii.

and will prove a welcome addition to all lovers of beautiful stove plants. B.

NEW VARIETIES OF OLEANDER.

M. SAHUT, nurseryman, of Montpellier, has succeeded in raising a number of very fine and distinct varieties of Oleander (*Nerium Oleander*), both single and double-flowered. The following list, given by M. E. André in the *Illustration Horticole*, comprises the best of both kinds, with descriptions of the varieties.

SINGLE-FLOWERED VARIETIES.

CLAUDE BLANC.—Flowers very large, deep carmine when in bud; petals elongated, of a very brilliant light carmine, shaded and narrowly margined with purple; throat deep rose-colour,

when in bud; buds slightly swollen; petals of medium size somewhat turned inwards, of a pure flesh-colour, veined on the outside with delicate rose; throat of the same colour, strongly marked with light purple rays.

LOUIS BOURGUET.—Flowers small, fragrant; petals of medium size, turned inwards, of a brilliant deep carmine, faintly shaded and margined with a deeper tinge of the same colour; the back of the petals is of a lighter shade; throat deeper carmine, and margined with finely-cut appendages. The odour of this plant is very agreeable.

All the foregoing are vigorous-growing and free-flowering varieties, and are well adapted for flower-beds in the open air.

MADAME DUBOIS.—Flowers of medium size; petals moderately broad, turned inwards, of a very pure white colour

throat margined with long white appendages. This is the finest of all the white-flowered Oleanders.

DOUBLE-FLOWERED VARIETIES.

The greater number of these are this year, for the first time, offered for sale. They are quite a new form of Oleander, differing from the old double-blossomed kinds in the circumstance that each of the flowers is composed of two single flowers exactly alike, one inserted into the other, but remaining perfectly distinct, so that it may be easily detached without injury to either. Independent of this singularity of structure in the flowers, which renders them fine subjects for vases, the plants are generally robust and vigorous growers, well adapted for open air culture, and the flowers, when faded, fall of themselves, like those of the single-flowered kinds, differing in this respect from the old double-flowered varieties, the flowers of which, when faded, remain on the plants and must be removed by the hand if it is desired to avoid the unsightly appearance which they present.

EDOUARD ANDRÉ.—Flowers of medium size, fragrant, light carmine when in bud; petals very broad; inner flower of a very delicate rose-colour, shaded with flesh-colour (sometimes streaked with white), with a narrow margin of bright rose-colour; outer flower somewhat deeper in shade; throat in both of a yellowish-white, rayed with carmine. A vigorous-growing variety.

EXPOSITION UNIVERSELLE.—Flowers small, slightly fragrant, sometimes with a triple corolla, of a deep rose-colour when in bud; petals moderately broad; inner flower flesh-colour, with a narrow rose-coloured margin. Outer flower similar in colour; throat in both flesh-coloured, yellow at the base, rayed with carmine, and margined with very long appendages.

HENRI MARÈS.—Flowers of medium size, with an agreeable fragrance resembling that of Magnolia flowers, deep carmine when in bud; petals very broad; inner flower, frequently with the petals free, of a delicate rose-colour, with a narrow margin of brilliant carmine. Outer flower with narrow petals of the same colour; the throat in both of a delicate rose-colour, yellowish-white at the base, faintly rayed with light carmine. A fine vigorous-growing and free-flowering variety.

PROFESSEUR PLANCHON.—Flowers large, slightly fragrant, sometimes with a triple corolla, light carmine when in bud; inner flower with broad petals of a scorched flesh-colour, shaded and narrowly margined with deep rose, sometimes rayed with yellow (a new combination of colours). Outer flower with narrower petals of the same colour; throat in both of a deep canary-yellow rayed with bright carmine. A very remarkable variety.

SOUVENIR DE CLAUDE SAHUT.—Flowers of medium size, light carmine when in bud; petals very broad; inner flower of a light rose-colour, with a narrow margin of deeper rose. Outer flower similar in colour; throat in both of a deeper rose, rayed with carmine. A fine vigorous-growing and free-flowering variety, well adapted for cultivation in the open air.

SOUVENIR DE FÉLIX DUNAL.—Flowers of medium size, slightly fragrant, carmine when in bud; petals very broad; inner flower rose-colour, slightly tinged (sometimes streaked) with white, with a broad margin of bright carmine. Outer flower deep rose with a narrow margin of light carmine; throat in both light rose-colour rayed with deeper rose. A very fine variety.

PIERRE ROUDIER.—Flowers of medium size, often with a triple corolla, each of the three quite distinct from the others; petals very broad, of a deep carmine when in bud. Inner flower of a delicate rose-colour, tinged with deeper rose (sometimes with white rays), and margined with bright rose. When there are three corollas, the intermediate one is similar to the inner one. The outer flower has narrower petals; throat of all (three or two corollas) deep rose, yellowish-white at the base and strongly marked with deep rosy rays. A fine variety.

PROFESSEUR DURAND.—Flowers of medium size, sulphur-yellow when in bud; petals broad; inner flower straw-colour; throat sulphur-yellow, margined with very long and finely-cut appendages. Outer flower set at a great distance from the inner one, and of the same colour except in the throat, which

is of a lemon-yellow and margined with wide-spreading appendages. A very fine variety,

MADAME PLANCHON.—Flowers very large, slightly fragrant, light carmine when in bud; petals broad; inner flower, sometimes divided into two parts, of a delicate lilac-rose (sometimes rayed with white), and margined with deep lilac. Outer flower of a deeper lilac-rose; throat in both of a straw-colour, faintly rayed with light carmine and margined with finely-cut rose-coloured appendages. A very fine variety. W. M.

ATTALEA SPECIOSA.

This belongs to a genus of lofty Palms, natives of tropical South America. Their leaves are large and pinnate, often curving naturally in such a graceful way as to form perfect arches. Tree Ferns are now comparatively common at our flower shows, as are also young Palms; but among the latter what could be more delightful in the centre of a tent than a plant of this fine Brazilian species? It must, however, have attained a height of from 20 to 30 feet before its beauty can be said to have been fully developed. A singular fact in reference to this genus is, that the stem runs in the ground, the new roots keeping the growing point under, the old part only turning up. Its local name is Inaja. It requires to be kept very wet, and in a stove temperature. It is, however, one of the easiest of all Palms to grow. Coquilli nuts, used for toy making and for other purposes, are the seeds produced by this and other species of *Attalea*. Such fine-leaved plants as this should have a clear space around them, or their beauty is impaired. J. CROUCHER.

Triteleia uniflora.—I have half a dozen pots with twelve roots of this *Triteleia* in each, and I left them in a frame where they were wintered with Violets, *Dentzias*, &c. The roots were strong and selected as the best. They came up well and made good "Grass," but only on one potful was there any bloom. Were they not treated properly? or how should I act when potting them in a short time? If you can give me some hints as to the successful treatment of them, I shall be much obliged.—J. T. P. [You ought to have been successful, as your treatment seems right. Perhaps you have too many roots for the size of the pots. We should put twelve in a 5 or 6-inch pot, set them out of doors till the pots are well covered with foliage, then place them in the greenhouse close to the glass, and take care that they never suffer from want of water. Where Violets succeed, this *Triteleia* ought also to succeed; but try the greenhouse shelf, and in a southern aspect you may have it in flower right throughout the winter. In mild winters we have seen it in flower in the open ground, from December onwards, and in ordinary seasons it commences to flower about March; indoors it should therefore flower right throughout the winter months.—PETER BARR.]

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Double-flowered Begonias.—M. Léon de Saint-Jean, vice-president of the *Cercle horticole lyonnais*, writes to a continental horticultural journal, stating that a double-flowered variety of *Begonia Solenii* has made its appearance in the gardens of the Parc de la Tête d'Or at Lyons.

Agave Hookeri.—The noble specimen of this *Aloe* in the succulent house at Kew is evidently preparing to throw up its flower-spike. The lower leaves droop much more placidly than usual, and are assuming the sickly colour peculiar to these plants when about to flower.

The Australian Grass Tree (*Xanthorrhoea australis*).—A fine imported plant of this is just now throwing up a flower-spike in the succulent house at Kew. The plant measures from 6 to 8 feet in height, and bears a spike resembling that of the common Bulrush (*Typha*) of our ponds and ditches.

Glazonia insignis.—This elegant dwarf Palm is, next to *Cocos Weddelliana*, perhaps one of the most charming of the smaller species yet in cultivation. It is a little taller than *C. Weddelliana*, and has narrower leaves, which in certain lights display a silvery-metallic reflection. Both are natives of the same district in Brazil, and require similar treatment.

Ismene calanthina.—This is a scarce but beautifully fragrant greenhouse bulb, which bears a couple of pure white flowers on scapes a foot high. The corona is very large, and the filaments of the anthers are each bent horizontally, something in the style of the *Gloriosas*. It has green strap-shaped leaves nearly as long as the scapes, and the plant is well worth growing on account of its delicious perfume. It is flowering in the Heath house at Kew.—F. W. B.

Ceropegia Saundersoni.—This singular species is just now in flower in the stoves at Kew. It is a climber, from the Cape of Good Hope, and has dark green stems and deep green Hoya-like leaves. Its flowers measure an inch and a half across, are funnel-shaped, and have a curious umbrella-like cover over the orifice of the tube. Its flower has a translucent appearance, and is white netted with apple-green. The plant is easily propagated, and is well worth attention.—B.

THE FLOWER GARDEN.

PENTSTEMONS.

THIS extensive and handsome family of plants is nearly allied to our native Foxglove (*Digitalis*). It differs from them, however, in the circumstance that all the flowers of the genus have five stamens, to which it owes its botanical name, which is compounded of the Greek words, *penté* five, and *stemon* stamen. The arrangement of these stamens is not a little remarkable, the fifth being always placed at the base of the corolla on the opposite side to the other four, and reaching right across the interior of the flower until it meets the upper side. This stamen is invariably barren, that is, it never bears an anther, and its function appears to be that of a sort of lever, which, when a bee enters the flower, shall bring down upon him the anthers of the four fertile stamens, and ensure that his body shall be well dusted with their pollen for the fertilisation of the next flower into which he may enter. This genus of plants belongs exclusively to North America, its distribution ranging from the higher latitudes of the United States to the Isthmus of Panama, and they are found in every variety of soil and position—in low alluvial districts, in sandy or calcareous plains, in pine barrens, on the slopes of mountains, and even near their summits, close under the line of eternal snow, where they are necessarily of dwarf stature, but display the rare and vivid beauty of bloom characteristic of almost all Alpine plants. They are all perennial plants, with opposite, glaucous, or shining, leaves, and bear their Foxglove-like flowers in panicles or clusters, in various shades of blue, violet, purple, yellow, and white.

PROPAGATION OF PENTSTEMONS.

This is effected either by means of seed or by cuttings. Any attempt to multiply them by division of the tufts will be found to result, for the most part, in the entire loss of the plants. *P. barbatus* and *P. procerus*, however, endure this mode of propagation. Seed should be sown in February or March on a gentle hot-bed under a frame in seed-pans well drained with broken plaster, and filled with a compost of peat-soil and sand. In April the seedlings should be pricked out under a frame, and these, planted out in May, will, as a rule, usually come into flower by autumn of the same year. Another mode is to sow in May or June, in the open air, in ground enriched with leaf-mould. The seed-beds should be covered with chopped Moss to preserve a uniform coolness and humidity. In August the seedlings should be potted and removed to a greenhouse or conservatory for the winter. It is necessary to observe that the seed, sown at either of these seasons, frequently does not germinate until the following year. Amongst the finest kinds of Pentstemon the following are most deserving of notice:—*P. acuminatus*, *azureus*, *barbatus*, *campanulatus*, *Cobæa*, *cordifolius*, *cyananthus*, *Digitalis*, *gentianoides*, *grandiflorus*, *Hartwegii*, *heterophyllus*, *Jaffrayanus*, *linearis*, *Lobbii*, *ovatus*, *procerus*, *speciosus*, *Torreyi*, (a variety of *barbatus*), *venustus*, and *Wrightii*. *P. Cobæa* (true) is a magnificent species having larger flowers than any other of the family, of a rosy-white, streaked with a port-wine tinge. The gem of the genus, however, is *P. Jaffrayanus*, which has flowers of an exquisite blue with lustrous metallic reflections. *P. Lobbii* is the only species which has yellow flowers. Of the numerous hybrids (many of which surpass their progenitors in beauty) which have been raised by florists we do not propose to take notice here, our concern, for the present, being merely with the finest of the natural species. As regards hardiness, the following distinction may be made, classing amongst the most hardy, *P. Digitalis*, *ovatus*, *campanulatus*, *acuminatus*, *barbatus*, *argutus*, *procerus*, and *venustus*, while amongst the less hardy are *P. Cobæa*, *azureus*, *Murrayanus*, *cyananthus*, *Jaffrayanus*, *grandiflorus*, *heterophyllus*, *Torreyi*, and *Wrightii*. These, if left in the open air in winter, should be covered with a cloche or bell-glass, and during frost the necks of the plants should be protected with a little mound of sand and a few handfuls of Moss. In order to secure a vigorous growth and luxuriant bloom, it is necessary to plant them in a warm and airy position, with an easterly aspect. The soil should be well drained, light, but substantial, and manured with lime-rubbish. Heavy, cold, and damp soils do not suit them.

THE FLAME NASTURTIUM.

(*TROPEOLUM SPECIOSUM*.)

THIS is one of those plants that are found in many gardens, but very seldom in good condition. That failure, however, must not always be attributed to the cultivator, for sometimes soil and climate are against the plant, and, no matter how we treat it, it will not grow luxuriantly and satisfactorily. When the conditions are favourable to its growth, it is one of the most beautiful plants that can be introduced into a garden, growing, as it does when in perfection, to a height of 10 or 12 feet, or even more, and producing an immense mass of vermilion-crimson flowers, with the most elegant drapery of bright green six-lobed leaves. It is certain, however, that it requires a deep open soil, well drained and somewhat peaty, plenty of moisture in the soil being always necessary, and the plants seem to thrive best in partial shade, and in localities where the atmosphere is naturally somewhat moist. The finest specimen of this *Tropæolum* that I ever saw was one growing against the western gable of a blacksmith's house on the estate of Altyre, in Morayshire. The house being in a small open space near the centre of a large wood, it was well sheltered; the atmosphere was rather moist, and the soil open, damp, and of a peaty-loam character. The fire-places in that part of the country being generally the old-fashioned hearths, and commonly situated against the gables, the soil immediately outside of the wall is consequently warmer than that in other parts of the garden. On this gable the plants grow most luxuriantly, reaching to the top of the house (a distance of about 15 feet), and from Midsummer until late in autumn form a brilliant sheet of crimson. This piece of bright colour, surrounded on all sides by the dark green of the Scotch Firs, is the attraction of the whole neighbourhood. At Brodie Castle, on the western side of the large conservatory, is a wire trellis covered with this beautiful plant, which wanders from the trellis and intermixes with the fruit trees on the adjoining wall, the top of which it surmounts. The soil in which this specimen is growing is a light loam.

In Messrs. Veitch's nurseries, at Exeter, this climbing plant used to be grown to perfection. Mr. Taylor, the foreman (now at Chelsea), told me that he scooped out a trench, filled it with fagots, over which were placed peaty turves, then the ordinary soil, and by this means the plants in question attained their glorious development. In the Chelsea nurseries, however, Mr. Taylor has tried it in a border at the base of one of the stove walls; but he cannot, by any amount of coaxing, entice the plants to grow well, although they are apparently in an excellent position. To the vitiated atmosphere of the district, and perhaps the dryness of the soil caused by the heat of the stove wall, he attributes this.

Although this plant is so difficult to grow well, it is, nevertheless, very tenacious of life, and will continue to exist, growing and spreading a little, even under very adverse circumstances. A trellis should be provided for the shoots to creep on; the wire netting commonly used for rabbit fences suits admirably; and, as the plants have a particular tendency to grow upwards, they seldom require any tying beyond re-inserting any cross shoots that may emerge from the main body and hang down. An erect growth should be encouraged until the plants have attained the desired height, when they may be permitted to depend their shoots in graceful drapery, and perfect and exhibit their blooms to advantage. After the shoots have been destroyed by frost, if not objectionable, they may be left untouched till spring, when they should be removed, and the trellis properly cleaned for the young shoots. As the bulk of the thick and fleshy roots keeps pretty near the surface of the soil, a mulching of decaying leaves over them will be found beneficial. This plant may be readily propagated by cutting up the roots in spring into as many bits as there are pushing eyes on them, and replanting them immediately; or it may be increased from seeds saved in the autumn, and sown in pots or in the open border in spring. Young plants, however, take some years before they attain strength enough to be particularly showy, but in the meantime, with a little care, the deficiency may be made up by means of *Tropæolum canariense*, *Bothwellianum*, and brilliant.

Wotton Hall Gardens, Aylesbury.

JAMES MORRISON.

THE ARTICHOKE AND CARDOON AS ORNAMENTAL PLANTS.

THESE plants, seldom seen except in kitchen gardens, might be employed with much advantage in plantations of what are termed "fine-foliaged" or "sub-tropical" plants, were it for nothing else but the contrast afforded by their distinct and striking foliage. Both plants, moreover, are perfectly hardy and of easy culture. The fine leaves of the Artichoke (*Cynara Scolymus*), which grow from 3 to 4 feet long, and are of a pale green colour on the upper surface, and covered with a whitish cottony-down beneath, are exceedingly ornamental, whether the plants be placed as single specimens or grouped three or more together. Few plants are more easily grown; all it requires is a deep, substantial, and well-manured soil. During the summer, the ground should be kept free from weeds, and water should be given freely. When the heads make their appearance in the end of the summer, the plants become still more ornamental. The best kinds, from a decorative point of view, are those known in France as the Artichaut violet, the Artichaut vert, the Artichaut Laon, and the Artichaut camus. All of them are easily propagated from off-sets.

The Cardoon (*Cynara Cardunculus*) is, perhaps, still more ornamental than the Artichoke, to which it is nearly allied. It has somewhat of the character of a huge Thistle, with broad, deeply-cut leaves 3 to 4 feet long, of a delicate green colour, covered with a whitish down, and frequently spiny. The kinds grown in kitchen-gardens are comparatively smooth-leaved, such as the Cardon plein inermé and the Cardon Puvís. They are not so ornamental, however, as the Cardon de Tours, which is a particularly spiny kind, and not so much cultivated as the others as a vegetable, from the greater difficulty in gathering in the crop. When any of the kinds are grown for ornament the leaves should never be tied up and blanched, as if they were grown as vegetables. As an isolated specimen, the Cardoon is one of the most ornamental and effective foliage-plants that can be grown. It is raised from seed, and requires no greater attention than the Artichoke in its culture, the details of which are precisely the same.

The Day Lily (*Hemerocallis*).—This very decorative plant is not so generally used as it should be in shrubberies and flower borders, in semi-wild situations, and on the margins of ponds and lakes. For nearly two months past in my grounds it has been an object of general admiration. The first to flower was *H. Sieboldii*, with its fine orange coloured flowers and graceful narrow foliage. After that came *H. fulva*, with bronze orange-red flowers shading off to crimson, the centre being yellow. Next came *H. Thunbergii*, clear beautiful yellow. Then *H. Kwanso* flore pleno, with large double flowers of a fine rich apricot colour, shading off to crimson, and along with it *H. disticha* flore pleno, with rich glowing orange finely formed double flowers, shading off to intense crimson. *H. fulva* and *Kwanso* flore pleno attain a height of 4 feet; *Thunbergii*, 3 feet; *disticha* flore pleno, a little over 2 feet; and *Sieboldii*, about 2 feet. Besides these I have other varieties of *Hemerocallis* in my collection which have not yet bloomed. For furnishing vases, the cut spikes of flower are most ornamental. As with ordinary Lilies all the undeveloped flower-buds expand in water.—PETER BARR, 12, King Street, Covent Garden.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Rosy Loose-strife (*Lythrum Salicaria roseum*).—This handsome variety of a well-known native plant, now blooming so showily in many gardens where good perennials are grown, should be planted by the side of lakes, streams, and ornamental waters, in which positions it will thrive abundantly. It also grows well in dry ground.—W. R.

Vases.—As you have (July 19th) devoted to Terra Cotta v. Iron a few lines in your paper, perhaps you may think it but fair to allow us to state that those two materials are not the only ones with which durable vases are made. We have one in our show yard which was placed there in 1826; it is 8 feet in diameter, and has been filled with earth ever since, i.e., during both summer and winter for forty-six years.—AUSTIN & SEELY.

Nasturtium on Irish Yew.—In a Kentish garden, the other day, I saw a pretty little picture formed by shoots of *Nasturtium* running up some Irish Yews planted near. A single shoot with its blazing flowers seen against the dark foliage of the Yew, was very much more effective than some large masses of the same *Nasturtium* on the ground close by. Such combinations are very pretty, and may be made in great variety without injury to the tree or shrub which forms the support.—W. R.

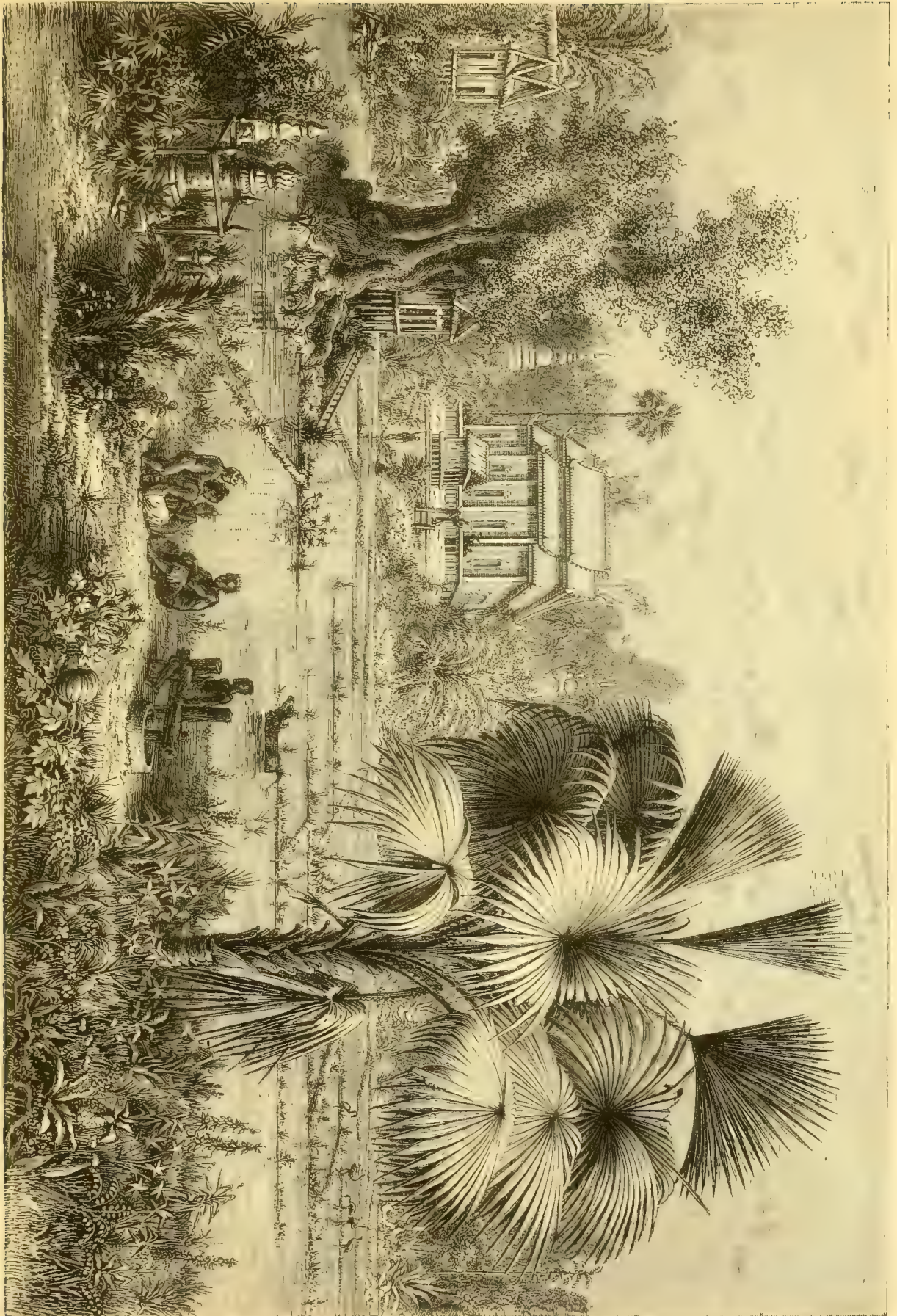
Stellaria graminifolia aurea.—This Chickweed is a purely golden variety, of the species whose name it bears, and it retains persistently its yellow colour throughout the whole year. Amongst carpet plants it will be found extremely useful, more particularly so on account of its adaptability for growing under a moderate amount of shade, such as that produced by broad-headed Rhododendrons, tall Fuchsias, and India-rubber plants. It requires pinching now and then to keep it within bounds, and to preserve the symmetry of the pattern when used in that way, and it grows freely in any kind of garden soil.—J. ANDERSON.

A BUDDHIST GARDEN.

THE accompanying illustration is a representation of the surroundings of a Buddhist temple in Ceylon, and of the rich vegetation by which such buildings are surrounded. They are generally situated in a well-wooded grove and in a neighbourhood in which water is abundant. In Sir Emerson Tennent's history of Ceylon, published by Messrs. Longman, we find the following remarks in reference to Buddhism and horticulture.

One peculiarity in the Buddhist ceremonial served at all times to give a singular impulse to the progress of horticulture. Flowers and garlands are introduced in its religious rites to the utmost excess. The atmosphere of the viharas and temples is rendered oppressive with the perfume of Champac and Jessamine, and the shrine of the deity, the pedestals of his image, and the steps leading to the temple are strewn thickly with blossoms of the Nagaha and the Lotus. At an earlier period the profusion in which these beautiful emblems were employed in sacred decorations appears almost incredible; the Mahawanso relates that the Ruanwellé dagoba, which was 270 feet in height, was on one occasion "festooned with garlands from pedestal to pinnacle till it resembled one uniform bouquet;" and at another time, it and the lofty dagoba at Mihintala were buried under heaps of Jessamine from the ground to the summit. Fa Hian, in describing his visit to Anarajapoorā in the fourth century, dwells with admiration and wonder on the perfumes and flowers lavished on their worship by the Singhalese; and the native historians constantly allude as familiar incidents to the profusion in which they were employed on ordinary occasions, and to the formation by successive kings of innumerable gardens for the floral requirements of the temples. The capital was surrounded on all sides by flower gardens, and these were multiplied so extensively that, according to the Rajaratnacari, one was to be found within a distance of four leagues in any part of Ceylon. Amongst the regulations of the temple built at Dambadenia, in the thirteenth century, was "every day an offering of 100,000 flowers, and each day a different flower." Another advantage conferred by Buddhism on the country was the planting of fruit trees and esculent vegetables for the gratuitous use of travellers in all the frequented parts of the island. The historical evidences of this are singularly corroborative of the genuineness of the Buddhist edicts engraved on various rocks and monuments in India, the deciphering of which was the grand achievement of Prinsep and his learned coadjutors. On the pillars of Delhi, Allahabad, and other places, and on the rocks of Girnār and Dhāuli, there exist a number of Pali inscriptions purporting to be edicts of Asoka (the Dharmasoka of the Mahawanso), King of Magadha, in the third century before the Christian era, who, on his conversion to the religion of Buddha, commissioned Mahindo, his son, to undertake its establishment in Ceylon. In these edicts, which were promulgated in the vernacular dialect, the king endeavoured to impress both upon his subjects and allies, as well as those who, although aliens, were yet "united in the law" of Buddha, the divine precepts of their great teacher; prominent amongst which are the prohibition against taking animal life, and the injunction that, "everywhere wholesome vegetables, roots, and fruit trees shall be cultivated, and that on the roads wells shall be dug and trees planted for the enjoyment of men and animals." In apparent conformity with these edicts, one of the kings of Ceylon, Addagaimunn, about the year 20 A.D., is stated in the Mahawanso to have "caused to be planted throughout the island every description of fruit-bearing creepers, and interdicted the destruction of animal life," and similar acts of pious benevolence, performed by command of various other sovereigns, are adverted to on numerous occasions.

Our illustration shows a noble Talipot Palm (*Corypha umbraculifera*), the leaves of which are used by the Buddhist monks—prepared in small narrow strips—as books on which to record their sacred writings, &c. The history and poetical writings of Ceylon have been for ages past written on these narrow strips of Palm leaves, known to the natives by the term of Olas. The leaves of the Talipot Palm are also used as umbrellas and sunshades, also for covering huts and making temporary tents. It is the noblest of the Palm family, growing often to the height of 100 feet. It only flowers once and then dies. I saw a noble grove, about three years ago, all flowering at one time. They had a truly grand appearance, and would produce some thousands of seeds. Every temple must have its sacred "Bo Tree" (*Ficus religiosa*), as shown in our drawing, taken from the ancient tree at Andrapoorā, planted there by Buddha or his followers, and said to be one of the oldest trees in the world; they are usually planted in some conspicuous place fronting the temple. PETER WALLACE.



TALIPOT PALM AND BUDDHIST GARDEN.

THE FRUIT GARDEN.

GRAPES WORTH GROWING.

WHILE agreeing with "S." (see p. 88) in regard to most of the Grapes he enumerates as worth growing, I must demur to the Golden Champion. No Grape has ever caused so much disappointment. As a rule, it is utterly worthless. So much is this the case that I question if its raiser has a single Vine of it in his huge vineyard. Some Grapes crack, shank, and refuse to colour or finish well; others are bad keepers, rotting almost as soon as ripe; but the Golden Champion rots before it is fit to eat. When approaching maturity, the spot over-runs the berries, and each spot becomes a nucleus of rottenness; and this is the rule. One could almost count the exceptions on the fingers of one hand, and the exceptions are not constant. Where it has ripened properly one season, it spots and rots the next. Hundreds of cultivators have cut it out and thrown it away, or worked it with better sorts. Such being the case, and I can vouch for these facts, I say to your readers who are about to plant the Golden Champion, "Don't." As to the Duke of Buccleuch, I can also speak with authority. It has more than all the good qualities of the Golden Champion with none of its faults. No spot, no tendency to rot when ripe; but, on the contrary, is one of the best keepers of early Grapes. Its size, also, exceeds that of all others. It is six weeks earlier than the Black Hamburg under the same treatment. Its flavour and character are best described thus: What champagne is among wines, the Duke of Buccleuch is among Grapes. The raiser has such faith in it that he has furnished two Vineries, each 200 feet long and 20 wide, with this variety for market. It also fetches almost double the price of other Grapes in Covent Garden, and in Edinburgh, Glasgow, and other large towns. Emphatically, I should enrol the Duke of Buccleuch among the Grapes most worth planting. As to the Waltham Cross Grape, it looks well on paper; but I have no experience of its qualities. It is spoken well of by many, and, as "S." writes, it should be tried. The Madresfield Court is a noble Grape; but it cracks to a serious and disfiguring extent in some places—a little, probably, in all. I should be glad to have the experience of Mr. Stevens, of Trentham, and Mr. Speed, of Chatsworth, both of whom grow this Grape extremely well, on this fault this year, before very strongly recommending it for general cultivation. It is a most discouraging termination to a course of careful culture to have the berries burst in a wholesale manner. Doubtless a dry temperature inside checks to some extent this tendency to split; but it can hardly counteract a heavy rain, or watering at the roots, or a spell of close, moist, muggy weather. The Chasselas Musqué is distinguished by the same fault—viz., that of cracking. It is, however, easily stopped by an extremely dry temperature, which causes a slight shrivelling; and, when that state is induced, all danger from cracking is over—the skin gains strength, and the pressure upon it is removed. Finally, I think "S." ranks Raisin de Calabre rather too highly. A Grape that requires the same treatment as the Muscats to perfect it is hardly worth growing, unless in situations where the Muscat refuses to thrive, or in those still rarer cases where it is not liked.

D. T. FISH.

THE FIG IN POTS.

THERE is no plan so simple and so successful as that of growing the Fig in pots when it is grown under glass. The plants are so completely under control, and their culture and general management is such a simple matter, that the merest novice in gardening may succeed. It is a number of years now since I adopted the pot system with early and free-bearing varieties like the Brown Turkey (for there are some kinds, like the Castle Kennedy Fig, which are not adapted for pot culture), and the crops have always been excellent, sometimes three crops in a season; in fact, three crops may be had as easily as two—it is only a matter of starting the plants a little earlier, and carrying them on a little later. Those who think of attempting the pot system should look out for their plants in autumn. It does not matter much whether they are big or little, as young plants bear equally well as old ones in pots; and they require less pot room at first, and can be grown closer together, so that the allotted space may be filled at once, and a large quantity of fruit gathered the first season. When I began first it was with a nondescript collection of plants, chiefly Brown Turkey, gathered from various sources, some of which had been in their pots for ten years or more, and some not as many months. In autumn, just before the leaves fell off, they were all re-potted. The young plants received a larger shift, and the old ones had their matted balls sliced down, and were restored to the same sized pots again, using a good strong fibry loam well chopped up, and mixed with a considerable quantity of old lime-rubbish, which is most suitable for Figs. The object of potting the plants in autumn before the leaves fall is

to give the roots a start before winter sets in, and partially establish the plants. If the potting is delayed beyond this period, the chances are that the first crop of fruit will drop the following season; and as pot Figs require to be re-potted every season, or every second season at the farthest, this is a matter of some importance. To have ripe Figs early in May and in June, the plants must be started by the beginning of February. The second crop is generally a sure one, but the first is always precarious, and a little more attention is required to secure it. Very much depends upon the temperature in the early stages of forcing. A night temperature of 50°, with a rise of 15° or 20° with sun, is high enough at first. If the plants are hurried, the wood-buds will advance quickly, but at the expense of the fruit. When the embryo fruit-buds, at the joints of the last year's wood, advance regularly with the foliage, it is a sign that the temperature, moisture, and other conditions are favourable. Of course, if the wood has not been well matured the previous autumn, there is little chance at all of a good first crop. As soon as the young shoots have made three or four leaves, they should be stopped. This will hasten the first crop, and cause a second and more abundant crop to appear on the young wood, and they should again be stopped beyond the next three joints, to induce a successional or third crop if it is desired; but the last growths should finish with a terminal bud, therefore the pinching should not be carried on till too late in the autumn. I need hardly say that the Fig, when grown in pots, can scarcely be over-watered, and it will stand, with advantage, frequent and strong doses of liquid-manure when the fruit is swelling. Bottom heat is not required, but it will be found highly advantageous to plunge the pots up to the rim in leaves, or any other medium that may be convenient.

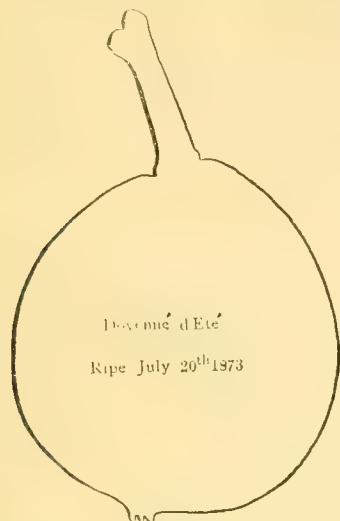
J. S.

The Cloudberry.—In a useful work, called "Over the Dovrefjells," by J. S. Shepard, we find the following account of the Cloudberry (*Rubus Chamæmorus*):—This fruit, the Multebær of the Norwegians, is beaten up into a mass, and with the addition of cream and sugar makes "a very dainty dish." The berries, which appear on every dinner table, are somewhat larger than Raspberries, and of a bright yellow colour. They grow in turfy bogs in elevated situations, improving in size and flavour the nearer they approach the north pole. The plant flowers in June, soon after the snow has melted, and the fruit scarcely ripens, in August, before it is again overwhelmed with its winter covering. By northern nations the Multebær is esteemed a most grateful and useful fruit, and its flavour by the Norwegians is thought superior to that of the Strawberry. The Laplanders preserve them by burying them under the snow, but in the southern districts they are made into a jam, which is almost as delicious as the fresh berries. Immense tracts of country, both in Lapland and the Loffoden Isles, are covered with them, and so important an article of diet are they as to have had a special Act of the Storting devoted to them, which, amongst other restrictions forbids any one (other than the proprietor) to gather more than he can eat on the spot.—J. B. Q.

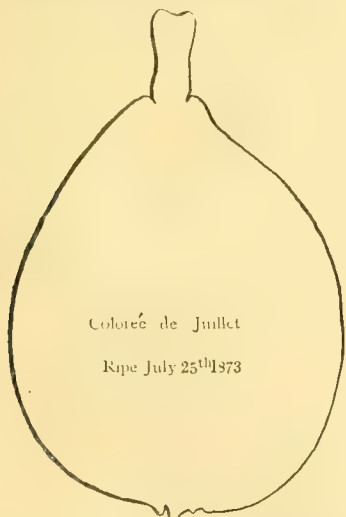
The Kaisha Apricot.—Of all our wall fruit crops there is none more precarious and uncertain than that of the Apricot. This is, of course, in a great measure owing to the untimely and very early period of the year at which it puts forth its blossom, the soil being yet icy cold, and the skies wintry and inclement. The risk and uncertainty are all the more, if by reason of a cold wet summer and autumn, such as we had last year, the wood be indifferently ripened, and, consequently, the bloom and its delicate organisms lack vigour and set badly. The Apricot is also very subject to gum and canker, and frequently the symmetry and balance of a fine tree is destroyed by a large arm or branch suddenly, and apparently unaccountably, dying off, and leaving an unseemly blank. A variety less subject to these contingencies, and more to be depended on than those generally grown, is very desirable, and such it seems is the Kaisha Apricot if what Mr. Tillery, of Welbeck Gardens, says of it, in the current month's issue of the *Florist*, may be relied on. He says that this variety for the last two seasons has proved with him the hardiest of any kind grown without protection. Last year the Moorpark, St. Ambrose, Orange, and others were total failures "but about half a crop was gathered of the Kaisha." This year again there is a failure in the Moorpark, and others, "but the Kaisha is bearing a full crop." This spring, too, all others sorts bloomed irregularly, and showed weakness in setting the fruit, "the Kaisha only excepted." He, therefore recommends a more extensive adoption of the Kaisha for planting by reason of its hardiness in unfavourable seasons. Another argument in its favour which he puts forward is that it is not subject to "gumming or canker in the branches, as on the Moorpark and other varieties, especially in gravelly soils." If any of our practical friends have experience of this variety, we shall be glad to hear if it is in accord with that of Mr. Tillery, more especially as to its behaviour this year.

PEARS OF THE SEASON.

DOYENNÉ D'ÉTÉ (Doyenné de Juillet, Jolimont précoc, Leroy-Jolimont, Poire de Juillet, Roi Jolimont, St. Michel, Summer Doyenné, and Colorée de Juillet, erroneously).—Fruit of third size and first quality, in use in July and August; shape roundish turbinate, even and regular in outline; skin smooth, greenish-yellow, but changing to bright yellow at maturity, with a thick coat of bright shining red on the sunny side and around the eye, and a patch of clear yellowish-spreading russet about the stalk, with minute greyish dots, which become



larger and of a reddish colour on the sunny side; stalk generally above an inch long, strong, and set upright, almost level, and by the side of a fleshy protuberance; eye irregular, half-closed or shut, placed nearly level, or in a very slight pursed or plaited basin; flesh whitish, buttery, sugary, melting, rich, and juicy. One of the very best of early pears. It grows tolerably well upon the Quince, but should be double-grafted. On the Pear stock it soon forms a handsome prolific pyramid. It has been confounded with the Colorée de Juillet; but they are



quite distinct, especially in their qualities, the Doyenné being very juicy; the other rather dry—its only fault.

COLORÉE DE JUILLET.—Fruit of third size and second quality, because of its want of juice; in use in July and August; shape regular, turbinate, even in outline; skin smooth, greenish-yellow, changing as it ripens to bright yellow, very much covered with bright vermillion on the sunny side and around the eye, with a patch of bright russet about the stalk, and very obscure dots of greyish red; stalk half an inch long, set either upright or obliquely, almost level, and generally by the side

of a fleshy protuberance; eye partially open or shut, salient, and surrounded with plaits or small knobs; flesh rather coarse-grained, very rich and sugary, but wanting in juice. This variety does middling well upon the Quince; but is best double-worked. It quickly forms a nice prolific pyramid upon the Pear. The fruit, like that of the Doyenné d'Été, is beautiful, and forms a pretty feature in a dessert. It is not so juicy as the Doyenné; but it is richer in flavour, and might be preferred by some palates. I have been minute in describing these two Pears because of their great resemblance, and because the one is sometimes sold for the other; their forms, colouring, and juice at once distinguish them from each other. I enclose an outline figure of each, by which it will be seen that their forms differ considerably, as does also the length of their stalk. Their eyes are exactly alike, the colour of the Colorée de Juillet is much brighter than that of the Doyenné, and it is mostly covered with a slight bloom. The two sorts are of very different ages, the Doyenné having been brought into notice about the end of the seventeenth century, whilst the other first fruited in 1857, and was raised by M. Boisbunel, of Rouen. Besides these two very early Pears, there are now being brought to our sea-side markets several other early kinds. I have this week picked up in the Weymouth market the following sorts, viz., Citron des Carmes and its variety, called C. de C. à longue queue, Muscat Petit, the earliest of Pears; Muscat Fleuré d'Été, a specimen of which I send you, as also a specimen of what they sell here as Green Jenetting, a corruption of the name Guenette. The specimen sent is not the true Guenette, but is our Green Chisel, not so rich a fruit as the Guenette. I need not enlarge upon these little early Pears, as but few of them deserve cultivation, although, nevertheless, they are sent from France to our markets in large quantities; and in Paris I have seen some of them brought to market in enormous quantities. Anything in the shape of early fruit being bought up readily, it would be well if cultivators would only grow the best instead of the inferior kinds for market.

J. SCOTT.

THE FRUIT CROPS.

Surrey.—Cobham Park.—Apples about here are not regular; some trees being as thick as they can hang, and others very thin; many very maggoty and falling off. Peaches on walls, fair crops; on standards, not half a crop. All sorts of stone fruit very scarce, the frost in May (12 degrees) distressed Peaches, Plums, and Cherries; Many Peach trees have not recovered yet. Small fruit are a fair crop.—G. S.

Yorkshire.—Bretton Park, Wakefield.—In this neighbourhood some kinds of fruit are plentiful; others scarce. The Strawberry crop has been most abundant. On the 19th July 80 lbs. of fruit were gathered from two rows of Eclipse—the rows are about 40 yards long, the plants a foot apart. Many of the fruit weighed 2 oz. each, and other kinds have been equally productive. Currants of all kinds are plentiful. Gooseberries are thin, with the exception of those in one or two cottage gardens where the bullfinches did not visit them in winter. Raspberries are a splendid crop, and the fruit is large, good, and bright in colour. Apricots and Peaches are about half a crop; a great part of the bloom was killed by frost before it opened. Some kinds of Apples are plentiful; but many of the trees had no bloom on them, but those that did blossom have set well. Pears are scarce on wall and standard trees; and Plums are quite a failure. Morello Cherries are a good crop, both on wall and standard trees. Early-blooming kinds have been good on walls; but on standards most of the blossom was destroyed by frost on the 20th of May. Figs look promising. Walnuts and Filberts are about an average crop.—G. CLIFTON.

—Wortley Hall, Sheffield.—Apples, Pears, Plums, and Apricots are but a poor crop hereabouts this season; Cherries are good, as are also Strawberries and Raspberries; but Currants and Gooseberries are nearly a failure, owing to the ravages of the bullfinch in spring. All vegetable and field crops look well; fruit crops, under glass, excellent.—J. SIMPSON.

Huntingdon.—Ramsey Abbey.—Stone fruits (with a few exceptions) are thin this year, in this neighbourhood. The exceptions I allude to are mostly trees that have been lifted within the last two or three years, thus suggesting the inference that it is desirable to keep the roots near the surface in order to ensure well-ripened wood in a season like last, when the rainfall was much above the average. Bush fruits and Strawberries are most abundant; Gooseberry and Black Currant bushes are

literally breaking down with their load of fruit. Apples and Pears are scarcely half a crop, and are smaller than usual at this season of the year. Grapes in the open air are not so plentiful as last year, and are too late to ripen well unless we have a very fine autumn. Walnuts are generally a fair crop. Everything in this neighbourhood is later than usual on the 1st of August. Potatoes in the Fen districts are looking well, and, so far as I have seen and heard, are generally free from disease; and if the present dry weather continues a week or two longer, a fine crop of sound tubers may be expected.—E. HOBDAV.

Suffolk.—Hardwicke House, Bury St. Edmunds.—Superior fruits, such as Pears, Peaches, Apricots, and Plums, are generally thin this season. Of course, there are exceptions. Apricots, for instance, are a general failure; but trees here and there are heavily laden, and we hear of some gardens with a good crop throughout. The scarcity of these fruits is not wholly owing to the May frosts. There was an imperfection of blossom generally, that seemed to hinder the fruit from fairly forming or setting. I saw a striking illustration of this the other day. Part of a Peach and Apricot wall had been covered with glass during the winter, and this was almost as thin as outside. The trees blossomed imperfectly, and there was a great lack of even imperfect blossoms. Nearly the whole of the flowers lacked substance, many of them were malformed, the colour was also paler than usual. Possibly, also, this resulted from the excess of rain in the autumn. At all events, this weakness of bloom as much, or more than the frost, explains the bare state of many walls this season. This, however, does not apply to plums. These were sheathed over with bloom, and the May frosts blackened them into barrenness. As the rule, with more exceptions than in the case of the others, we have some trees laden heavily, and have heard of some fine crops. Pears are certainly scarce; Apples are plentiful on the average, but they are also thin in places. Cherries are an extraordinary crop; it is emphatically a Cherry season with us here; all sorts seem plentiful, though many Morellos have dropped, whether from an excess of crop or a late frost nip it is difficult to affirm. The quality of the Cherry crop has likewise been good. Gooseberries, Currants, and Raspberries have been a very heavy crop. The bulk of these escaped the frost, and the yield has been unusually heavy, as many as 18 tons of Gooseberries have been marketed this season from 3 acres of ground. Raspberries got slightly blighted, or they must have exhausted themselves in bearing, as it is, the crop has been very heavy. Strawberries have also been unusually fine; a few Queens and others got black eyes by the late frosts and failed, but the general crop has been heavy and the flavour excellent. The sun, however, has been too much for late crops, such as Elton Pine, unless under a north wall, where they have been going on bearing fine fruit up to the end of July. The sun has a curious effect on Eltons, making the flesh brittle, falling asunder in lumps, and robbing the fruit of all its brisk, somewhat tart, flavour. I forgot to say that Mulberries and Medlars are pretty plentiful; Walnuts are thin, and other nuts abundant. Out of door Grapes are also fine, and Figs plentiful. Upon the whole, therefore, the fruit basket of the year has been, and will be, pretty fully furnished with good things. The partial or complete loss of our superior fruit is one more powerful plea for glass walls and orchard houses, and, in fact, these are arising in all directions.—D. T. FISH.

Devon.—Killerton, near Exeter.—Apricots here are very scarce; Apples, good; Pears, a fair crop; Plums, moderate, being much injured by bullfinches early in the year; Strawberries, plentiful; Cherries, good; Peaches and Nectarines, scarce; Figs, moderate; small fruits, abundant; Nuts, plentiful.—JOHN GARLAND.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Walnuts Dropping their Fruit.—We have a fine crop of Walnuts here this season on all the trees but one, which is about forty-eight years old; it promised to produce a good crop, but when the fruit was about the size of Hazel nuts it dropped off. It would be interesting to know the cause, which I attribute to failing vigour.—R. GILBERT, *Boughley*.

What Distance should Vines be from the Glass?—It would be interesting to ascertain the distance at which our best Vine-growers place their Vines from the glass. My opinion is that 22 inches is better than a less distance, as in that case there is no crowding of the foliage. In wiring, the modern style is to fix them in such a way as to crowd the foliage right against the glass, which is bad.—O. N.

Ripening Pears after they are Gathered.—An American fruit grower furnishes some directions on picking and ripening Pears. After alluding to the common test of ripeness for picking, namely, gently raising the fruit to see if it will readily detach itself at the stem, he directs that the specimens be placed thinly and evenly on the floor of a cool room, on a blanket previously spread, and covered with a second blanket. He says, "In a short time the effect of the treatment will be apparent in the most golden-coloured Bartlett and rich ruddy-looking Seckels imaginable. Pears perfected in this manner rarely have the meanness of their naturally ripened companions; nor do they prematurely decay at the core as when left on the tree."

THE KITCHEN GARDEN.

VARIETIES OF SQUASHES.

THE culture of Squashes or Pumpkins in America ranks next to that of Potatoes in importance. Vast quantities are annually raised there for cattle-feeding, and some of the kinds are much esteemed for table use. The following account of the principal varieties, extracted from Mr. J. H. Gregory's little book on the subject, may be interesting to cultivators in this country:—Owing to the great tendency in the varieties of the Cucurbitaceous family to cross with each other, hybrids are very common. Seed planted the first season after the crossing has been made will usually produce a greater crop than either of the parent kinds, and individual Squashes will be superior in quality to either of the parents; yet, as a rule, hybridisation is not desirable, for, after the first season, there is a deterioration in the quality below the average of the parent kinds, while the mixed varieties are not so marketable as the pure kinds.

SOFT-STEMMED KINDS.

THE HUBBARD SQUASH.—The form of the Hubbard is spherical at the middle, gradually receding to a neck at the stem end, and to a point usually curved at the calyx end, where it terminates in a kind of button or an Acorn. In colour it is dark green, excepting where it rests on the earth, where it is of an orange colour. It usually has streaks of dirty white, beginning at the calyx end, where the ribs meet, and extending half or two-thirds way up the Squash. After the Squash ripens, the surface exposed to the sun turns to a dirty brown colour. The surface is often quite rough, and presents quite a knotty appearance. When the Hubbard is ripe, it has a shell varying in thickness from that of a cent to that of a Spanish dollar. The true Hubbard is a favourite throughout the whole of the Squash-growing region.

AMERICAN TURBAN SQUASH.—I have given the prefix American Turban Squash, to distinguish it from the French Turban, with which many seedsmen have confounded it. The French Turban is the most beautiful in colour, and the most worthless in quality of all the varieties of Squash that have come to my notice. Nearly flat in shape, growing to 10 or 20 lbs. weight, it has a large prominence at the calyx, and shaped like a flattened Acorn; this is elegantly quartered, with a button in the middle, and is most beautifully striped with white and a bright grass green, while a setting of bead-work surrounds it. The body of the Squash is of the richest orange colour. In quality the French Turban is coarse, watery, and insipid. The American Turban is, without doubt, a combination of the Hubbard, Autumnal Marrow, Acorn, and French Turban, and the finest achievement, that has as yet been obtained by hybridisation. Like all hybrids, it tends to sport, and varies somewhat in quality, so that while most of the Squashes are of first quality, some will be found that are inferior; yet, with such parents as the Hubbard, Acorn, and the Autumnal Marrow (when we recall its early excellence), we might expect to find a superior Squash, and in the average quality of the Turban we shall not be disappointed; for, in dryness, fineness of grain, sweetness, delicacy of flavour, and richness of colour, when fully ripened it cannot be surpassed. Like the Hubbard, it is edible before it is fully ripe; either of these varieties, particularly the Hubbard, being superior for table use when unripe to any of the varieties of summer Squashes. The form of the body of the Squash is nearly cylindrical, the two diameters being usually in the proportion of three to five, while it is more or less flat at both the stem and calyx ends. At the calyx end there is usually more or less prominent an Acorn. This may be very clearly defined, standing out very prominently from the of the Squash, or it may be very much flattened and sunk within the body, with the Acorn barely traceable. In degree of prominence the Acorn sports greatly; for, on Squashes growing on the same Vine, I have found in one specimen the Acorn projecting very prominently, and very fully developed, while on a second specimen it could only be traced in a very rudimentary form. I have, as a rule, selected seed Squashes from those in which the Acorn was not very prominently displayed. Some writers on vegetables treat the American Turban Squash as but an improved form of the French Turban, whereas it is a distinct variety. It is indebted to the French Turban for

nothing more than the principal features of its form, getting its quality, keeping properties, colour and fineness of grain from its other parent. As the American Turban is the result of hybridisation, there is more or less of variety in the shape and colour of the crop, and this will continue to be so unless, by long and close cultivation of a particular type, sufficient individuality shall be required by this one type to stamp the entire crop. Though it may be a very pleasing thing to the eye to see every specimen alike, yet I consider it too great a risk to cultivate a hybrid Squash for this end; for who knows what characteristics each plant has contributed or how much these are affected by each other in combination? Until these points are determined, there is danger, lest in continued selections of a given type some good traits should be eliminated. We know that in some way the original excellence of the Autumnal Marrow Squash has been lost, and no one can, for a certainty, tell when or how this disappeared, and though originally an admixture of other sorts was doubtless the first step towards this deterioration, yet we are inclined to believe that a tendency to give prominence and individuality to the original admixture has gradually borne down the good traits of the original Marrow.

AUTUMNAL MARROW SQUASH.—This is also known as the Boston Marrow, or Marrow, it having been a very prominent Squash in the markets of Boston for a series of years. A mongrel early variety of it is also known as the "Cambridge Marrow." This Squash was introduced to the public by Mr. J. M. Ives, in the years 1831-2. When introduced, it was a small sized Squash, weighing 5 or 6 lbs., fine grained and dry, with an excellent flavour. Marketmen found that by crossing with the African and South American varieties, they could increase the size of the original Marrow; they did this without troubling themselves about any risk of deteriorating the quality, and I doubt not that much of the present inferior quality of the Marrow Squash is due to this vicious crossing. In form the Marrow is much like the Hubbard, but with less distinctive prominence in the neck and calyx. In colour, the Marrow is between a lemon-yellow and a rich orange; the skin is covered with fine indentations, giving it a pock-marked appearance. The body of the Squash is divided into sections by slight depressions in its longest diameter. Under the thin outer skin, or epidermis, is a thicker skin of a dark orange colour. The flesh is orange-coloured. The seeds are somewhat larger and thicker than in the Hubbard, and considerably larger but not so thick as in the Turban. In quality the Marrow of to-day varies much; sometimes we find specimens that are all that can be desired, particularly as we get near to the original type; but, in its general character, the Autumnal Marrow is watery, not sweet, and oftentimes deficient in flavour and fineness of texture. From its great productiveness, it is a favourite Squash with marketmen, and its rich orange-colour and handsome form render it popular with those who have not become acquainted with the more recently introduced and finer varieties. There are two varieties grown extensively for Boston market, known as the Cambridge Marrow. One of these is quite large in size, usually having the green-colour at the calyx, indicating a mongrel variety; the other is of medium size, and is characterised by a brilliant orange colour, that makes it very attractive to the eye. Both of them mature a little earlier than the purer sort. These three varieties of fleshy-stemmed Squashes, the Hubbard, American Turban, and Autumnal Marrow, include most of those raised for market purposes. There is a large number of other varieties, such as the Valparaiso, African, Honolulu, Coconut, Sweet Potato, &c., some of which have quite distinct characteristics, that are more or less raised in the family garden; but several of them are of inferior quality, some are hybrid, and, though one or two may be desirable for the garden, yet none of them, as far as I have made acquaintance with them, have characteristics which would invite their general cultivation.

HARD-STEMMED KINDS.

Passing to the hard or woody-stemmed varieties, we find included among them the Winter Crookneck, the Canada Crookneck, Yokohama, and Para.

CROOKNECKS.—These had their day and generation before the introduction of the soft-stemmed varieties. They were

then the standard sorts, and the kitchens of thrifty farmers were adorned with choice specimens hanging suspended around the walls by strips of list, to be used during the winter, in the course of the spring, and even well into the summer months. The Crooknecks are characterised by long, usually curved necks, terminating in a bulb-like prominence at the calyx end, which contains the seed. The Vines are covered with rough spines, and in the shortness of their leaf-stalks, the smaller size and different colour of the leaves, are readily distinguished from the soft-stemmed sorts. They vary much in colour at the time of the gathering, and there is a general tendency in all of them to change to a yellow hue in the course of the winter. In quality, the Large Winter Crookneck is coarse-grained and watery, while the Canada Crookneck is finer-grained, and at times quite dry and sweet. The Winter Crookneck weighs from 10 to 25 lbs. and upwards, and the true Canada Crookneck, which is rarely found pure, averages from 4 to 6 lbs. In keeping properties, the Crooknecks excel, frequently keeping in dry, warm apartments the year round, and, in a few instances, two years. When kept into the summer, the seeds are at times found to have sprouted within the Squash. The Crooknecks are subject to a kind of dry rot, particularly in spring, which gives them a peculiar appearance when cut, the tissue between the cells having a dull white colour, though the fibres of flesh still retain their bright yellow colour. Worthless for table use. The true measure of the length of time a Squash keeps, is how long it keeps its quality, and not its mere structure.

THE YOKOHAMA.—This is comparatively a new visitor from Japan, it having been received in this country in the year 1860, by Mr. James Hogg, from his brother then residing at Yokohama, in Japan. The Vine is a very free grower and a good yielder, though, from the comparatively small size of the Squash, the weight of the crop is not large when compared with the Hubbard, Turban, or Marrow. It is quite flat in shape, with somewhat of a depression at each end. The diameters are to each other about as one to three or four. It is deeply ribbed, and the flesh, which is of a lemon colour, is remarkably thick, making it the heaviest of all Squashes in proportion to its size. The flesh is very fine grained, smooth to the taste, and has a flavour resembling the Crookneck. With those who like the taste of the Crookneck, the Yokohama will likely be very popular. In external colour, before ripening, it is of an intensely dark green, covered with blisters, like a toad's back; as it ripens, it begins to turn of a light brown colour at both the stem and blossom ends, and, after storing, it soon becomes entirely of a copper-like colour, and is covered with a slight bloom. It may be well to start this Squash under glass, on squares of turf, though, after an experience of three seasons, I am persuaded that it is becoming acclimated; indeed, my crop of last season ripened with the Hubbard and Turban. The cultivation of the Yokohama is mostly confined, as yet, to private gardens.

PARA, OR POLK SQUASH.—This is a half-bush Squash. In the first stages of its growth, it has a bush habit, and sets its first fruit like a bush Squash; but, later, it pushes out runners 8 or 10 feet in length, and bears fruit along them. The Squash was brought to this country from Para, in South America. In shape it is oblong; it is ribbed, of a tea-green colour, excepting the portion which rests on the ground which is of a rich orange colour. The Squashes weigh about 3 lbs. each. They require the whole season to mature, and when in good condition, the flesh is dry and of a rich flavour. Like the Yokohama, I apprehend they will be very popular with a class, rather than with the community at large. Both the Yokohama and the Para can be kept well into the winter. I have kept a Yokohama, crossed on the Turban, fourteen months, and Hubbards, in two instances, twelve months.

THE SUMMER SQUASHES.

The remarks made relative to the cultivation of the fall and winter varieties, will apply to the cultivation of the summer Squashes, with the exception of the distance between the hills; this, as they are of a bushy habit, should be about 5 feet. In quality, the summer Squashes have but little to recommend them; it is principally their fresh new taste that makes them acceptable for the table. South of New York

the cultivation of Squashes is confined almost wholly to the bush varieties. Until recently, the New York market for fall and winter Squashes has been supplied largely by the growers around Boston. The standard summer varieties are the Yellow and White Bush Scallop, often called Pattypan or Cymbals, and the Summer Crookneck. Of these the Summer Crookneck is the best. All of these form a shell as they ripen, and are then unfit for the table. They should not be cooked after the shell can be felt by the thumb-nail. The Green Striped Bergen is an early variety, quite popular in the markets of New York. A small Squash, about twice the size of a large Orange, somewhat fluted, called Sweet Potato Squash, is highly prized by some who are of high repute among Squash fanciers. Several of the varieties that are grown as gourds, for ornamental purposes, are edible; a large proportion of them, indeed, as I have found on testing the largest of my specimens before feeding the pigs with them. As a general rule, all that are not bitter to the taste are edible. The Vegetable Marrow is about the only variety of the Squash family cultivated by our English cousins. With them it is brought to the table in the same style as our own varieties, or so cooked as to form part of a soup. The Custard Squash, one of the hard stemmed sorts, of a yellowish cream colour, oblong in shape, deeply ribbed, weighing from 12 to 20 lbs., is quite a favourite.

White or Silician Beet.—This truly delicious vegetable, when properly grown and dressed, is quite indispensable. To grow it well, deep digging and heavy manuring are necessary. It should be sown the third week in March, in drills 18 inches apart, kept clean by means of frequent hoeing, and thinned when its true character is observable. When true it is short and stocky, the leaves are of a light green and curled, and the stalk of such is of pearly whiteness, equalled only by that of forced Seakale. Should the summer be very dry, frequent soakings with sewage or dung water will be needful. About the first week in October it is ready for use, and, if protected by means of hay bands, it will last through the winter; and, for some months before Seakale comes in, I find this Beet to be particularly useful. For four years I never could obtain a good stock of it; but, as with everything else, so with Beet. When I get a good "strain," I always try to keep it.—R. GILBERT, *Burghley Gardens, Stamford.*

The Potato Crops.—I have carefully watched the Potato crops for the last month, and I am happy to say that I see no signs of disease. The yield is most abundant, and the quality everything that can be desired.—R. GILBERT, *Burghley, Stamford.*

THE HOUSEHOLD.

THE COMPOSITION OF THE GIANT PUFF-BALL.

(LYCOPERDON GIGANTEUM).

THE following account of the results of a chemical investigation into the composition of the Giant Puff-ball, by A. H. Church, Esq., M.A., appears in this month's number of the *Journal of Botany*.

In the autumn of 1871 some very large specimens of the Giant Puff-ball, *Lycoperdon giganteum*, were obtained from a field in the neighbourhood of Cirencester. Several of these weighed more than 2 lbs. avoirdupois apiece, while others were over 1 lb.

Previous to analysing the *Lycoperdon* it was dried in a current of warm air. During this process it underwent a curious change. Although the temperature to which it was submitted scarcely exceeded the boiling temperature of water, the mass of the Fungus was observed to glow with a dull red heat, until the whole had become converted into a black charred mass. The final burning was completed in a large platinum tray in a muffle.

The ash thus prepared had the following composition:—

	In 100 parts.
Phosphorus pentoxide	46.19
Potash	35.48
Soda	6.95
Lime	2.47
Ferric oxide	1.08
Silica . . . . .	.66
Other substances and loss	7.17
	100.00

Thus it will be seen that the mineral or ash constituents of this

Fungus consist mainly of potassium phosphate. We know that both the elements potassium and phosphorus are present in very small quantity in ordinary soils, but are accumulated by plants in considerable quantity, notably in their seeds and most actively growing parts. From what we have learnt of the mode of nutrition of Fungi, they may be regarded as amongst the carnivora of the vegetable kingdom. They probably obtain their food from the stores already accumulated by higher plants, and in this way their extraordinary richness in such elements as phosphorus and potassium may be accounted for. Thus, too, we can understand the increased fertility of the soil inside the "fairy rings" of our pastures, where the last decaying remains of the fungoid mycelium contribute their stores of concentrated and most assimilable nutriment to enrich an extending zone of surface soil. Nor is such enrichment confined to the ash constituents of the plant only. The analysis of the fresh Puff-ball reveals an enormous amount of nitrogenous matter amongst its constituents, and nitrogenous substances have a most marked effect upon the growth of meadow Grasses. I am inclined to think that some of the nitrogen of the *Lycoperdon* exists in the form of nitrates, and that in this way their spontaneous inflammability and high temperature may be explained. But in the following analyses the nitrogen is wholly calculated as albuminoid or proteid matter, since no special determination of the amount of nitrates present had been made.

Composition of *Lycoperdon giganteum*.

	In the fresh state.	When perfectly dry.
Water	90.89	—
Fat, oil and resinous matter . . . . .	.90	11.00
Albuminoids	5.48	66.78
Cellulose or fungin, &c.	2.10	14.78
Ash or mineral matter . . . . .	.63	7.41
	100.00	100.00

Magnolia Brandy.—On a fine dry day in August or September, when the blossoms of *Magnolia grandiflora* are most abundant, select the desired quantity, just as they are expanding, excluding such as have been open for some hours. Such as have not opened will answer the purpose; place them in strong wide-mouthed glass jars filled with the best pale brandy; cork them tightly, and set them in a safe place for a few weeks, then draw off the liquor, bottling it and corking safely. The colour and flavour of some of the liquor may, if desired, be altered by the application of a little Cinnamon or other fine-flavoured spices; but the *Magnolia* brandy will be found to be a very peculiar and grand liquor indeed, without additions of any kind.—JAMES BARNES, *Eamouth.*

How to Cook Egg Plants.—This is a delicious vegetable if it is only cooked rightly. **Fried Egg Plant.**—Take a large ripe purple egg, and cut it in slices of half an inch in thickness; strew a little salt over each, and lay on a plate for ten minutes or more to let the water run out; dip each slice into a well-beaten egg, and then in cracker or bread crumbs, and fry in hot butter or lard as you would oysters, and the plant will taste like fried fish. **Boiled Egg Plant.**—Cut the eggs in halves, and boil them until perfectly soft and tender; then scrape the pulp from the inside of the skins, season with salt, butter, &c., and strew sifted bread crumbs all over them. Set the dish into the oven to brown for ten minutes. **Baked Egg Plant.**—Wash the vegetables clean, and bake in the oven as you would Potatoes. Remove the skins while hot, mash to a paste, and season with butter, pepper, and salt. A raw Onion chopped fine and a little Pepper are considered great additions to this dish.

NOTES AND QUESTIONS ON THE HOUSEHOLD.

Green Artichokes Fried.—Cut a couple of green Artichokes into eight or more "quarters," according to the size of the Artichoke, and trim off all that is uneatable from each, putting them as they are trimmed in cold water with the juice of a Lemon squeezed into it to prevent their turning black. When the "quarters" are all done, dip them in batter (made with flour, oil, water, and eggs), see that each piece is well coated with it, and fry them in plenty of boiling lard; serve piled on a napkin and garnished with fried Parsley.

Green Artichokes with White Sauce.—Trim them as in the preceding recipe. Parboil them for ten minutes in salted water with the juice of a Lemon squeezed into it. Melt 2 ounces of butter in a saucepan, add a tablespoonful of flour, mix well, and put in as much water as will make sufficient sauce; season with pepper, salt, and nutmeg, and place the Artichokes in this sauce to finish cooking. When done, stir in, off the fire, the yolks of two eggs beaten up with the juice of a Lemon, and strained.

Green Artichokes Iced.—Cut off the tops of the leaves, and trim off the stalk and the hard leaves round it. Rub each Artichoke with a piece of Lemon as it is trimmed, and put them to cook in boiling water with the juice of a Lemon or a small quantity of white vinegar; when done, which is ascertained by the leaves pulling off easily, put the Artichokes upside down on a cloth to drain off all the water, then place them in the refrigerator or on ice to get as cold as possible without being frozen; serve with cold poivrade sauce.

LONDON FRUIT AND FLOWER MARKETS.

THE new meat market is the first building which has struck the true note of what a great metropolitan market ought to be. The building itself is spacious and handsome, and is a good specimen of the average artistic skill of English architects of the second half of the nineteenth century. Its traffic ways are broad and convenient; and that its arrangements answer the purpose intended is sufficiently proved by the increased and increasing value of the rentals.

It is scarcely more than thirty or forty years since the tumble-down stalls of old Covent Garden were swept away, and the comparatively neat and graceful structures, designed by Mr. Fowler, were made to occupy the site which the stalls had so long disgraced. The present buildings are neat, but altogether wanting in that stateliness of style and dimension which should characterise a great metropolitan market. This might easily be rectified, and the market and its necessary buildings greatly enlarged by an Act of the Legislature, authorising the purchase of that portion of the Duke of Bedford's property, including the surrounding houses which form the square. In case of such a purchase being effected, these houses would be pulled down, and stately structures would arise in their place, the lower stories of which would probably be open shops for



Flower market at the Madeleine.

the sale of fresh and dried fruits and vegetables, garden tools, garden ornaments, bulbs and other flower-roots, garden glass, and in fact everything connected with the fruit, vegetable, and flower garden. The central portion, adapted to the storing and sale of the daily supply of esculent roots, might be kept comparatively low, as at present, and surrounded with a line of trees, beneath which an open flower market, similar to that of the Madeleine in Paris, represented in our illustration, might be held. The carrying out of such a scheme as the purchase of this patch of the Bedford property, and constructing upon its site a noble, and at the same time beautiful, fruit and flower market, worthy of the metropolis, would not entail more interference with private property than is every day taking place for the extension of metropolitan railways, or other projects for facilitating the means of inter-communication between different parts of London and its daily increasing suburbs—even the interesting façade of Northumberland House being, possibly, doomed to make way for a spacious approach to the new embankment.

If it were deemed advisable to leave Covent Garden alone, a similar plan to the one suggested might be carried out in Leicester Square, which would have the double advantage of removing a nuisance and supplying an imperiously required desideratum. By purchasing and pulling down the surround-

ing houses a noble area might be created, as far as the rear of the National Gallery, to which a northern façade should be added, leaving a clear and broad roadway round the entire building, as there is round three sides of the Louvre. This, in itself, would so far improve the value of the surrounding land that the whole outlay might be more than covered by it. A noble fountain might occupy the centre, while the enclosed garden might be the flower and plant market; and there might also be rows of flower-stands under the trees, the lower story of the surrounding buildings forming a line of open fruit shops or vegetable shops. It may be urged that the establishment of Hungerford Fish Market was hailed by many as a great step in the right direction; and yet it proved an entire failure—partly, as it was said, by the combination of the West-end fishmongers against it, and partly from the habit of purchasers using private shops in preference to markets. The Farringdon Market was another gigantic failure; and recently Columbia Market has failed in a similar manner—partly through prejudice and partly through trading combinations. Still, a beautiful West-end flower and fruit market could not, one would think, fail to be a success at the present time. Covent Garden Market is very popular¹ and a better thing of the same kind, if on the requisite scale, would necessarily form a very fashionable resort, Covent Garden remaining a sort of early wholesale market and dépôt, and Leicester Market becoming one of display and of retail trade. Judging by the present rate of growth the whole market space of Covent Garden will in a few years not suffice for more than the fruit and flower trade alone; while the central market for the display and sale of the vegetables consumed by this vast city would alone require a very much larger market than the present one. Had we a single market large enough for the probable fruit, flower, and vegetable, herb and medicinal plant trade of London, and in other respects suitable, it would not only be a very great convenience to the inhabitants of London, but the most interesting sight ever seen therein; for the character of the garden produce round London is the finest and most varied known, and a market which would display it daily in all its freshness and beauty would indeed be an important addition to the few modern works—such as the Thames Embankment and the new Cattle Market at Islington, which are really worthy of London in our own day. But assuredly such a market is not to be made in a limited space like Covent Garden. H. N. H.

GARDEN STRUCTURES.

PIT IN WHICH TO WINTER GERANIUMS.

Will you kindly let me know the best manner to build a pit to keep Geraniums in in winter? whether brick, wood, or stone is best? and what method is best for heating, as I would like to have one made on the most approved principle? also what would be the cost for one with eight lights? and what ought the height to be at back and front to be most suitable? I think myself heating with hot-water pipes is best; therefore, if it is also your opinion, if you will let me know what sort of pipes and boiler I would require, you will greatly oblige

WM. WILKINSON.

Harehope, Alarwick.

[Local circumstances may in some places render the employment of stone, wood, or concrete for building such a pit desirable, but in most places bricks are the cheapest and best. The following are the dimensions of some of our pits, which were built for a similar purpose. The back wall is 3 feet high from ground line, front wall 1 foot 6 inches, width of pits outside 6 feet 9 inches, size of lights 7 feet by 4 feet; this is a very handy size. The pits are always at work. After the bedding plants are cleared out, they are filled with stable-dung and planted with Cucumbers or Melons. As soon as the Melons, &c., come off, the earth is made level and firm, and about 2 inches of ashes are placed on the top, when they are ready for such plants as Centaureas, Echeverias, &c., for the winter, and frequently in early spring I have gathered capital crops of Mushrooms from the spawn generated spontaneously in the stable-dung used the previous summer. In this neighbourhood, a pit of eight lights, 7 feet by 4 feet, made of the best 2-inch red deal, and glazed with 21-ounce glass; the pit walls to be of good 9-inch brickwork, and divided by 4-inch walls into two or three compartments, would cost about £25, exclusive of heating apparatus. However, the cost

of labour and materials vary in different counties, therefore all estimates of this kind are somewhat illusory. If proper care is taken in watering and ventilating, very little artificial heat will be required. To keep bedding plants in health in winter, the aim should be to keep the plants cool and fairly dry, so as not to stimulate growth during the short days in winter. Still it would not be safe to be without some means of keeping out severe frost and drying up damp, which is the greater enemy of the two. There is no question that hot water is the cleanest and best, especially if gas can be had near. What is required for such structures is a small boiler, that will act quickly in sudden emergencies; and I confess that my experience with small boilers has not been sufficient to warrant me in recommending one in preference to another. One row of 3-inch pipes will be ample if carried all round the pit. For simply wintering bedding plants the best and cheapest pits I have ever had were built up with earth and neatly turfed over outside. The walls inside the pits were lined with slates. The back walls were 20 inches high, and the front walls 10 inches. The framework and light were supported on posts at intervals; and of course, in constructing the pits, the posts and wall-plates were in position before the earth-walls were built up. Such pits are much warmer in winter than brick pits, and any handy man can build one after the carpenter has fixed the posts and wall-plates. I have wintered thousands of the usual kinds of bedding plants in such pits without any artificial heat at all; but it is always best and safest to have one row of 2-inch pipes all round the pit. Such pits will last a great many years if the bottoms of the posts are charred and the painting regularly attended to, and they are not so conspicuous as brick pits, and might therefore be placed in some part of the grounds, if necessary, where brick pits would not be tolerated. —E. HORDAY.]

THE GARDEN FLORA.

NEW AND RARE PLANTS RECENTLY FIGURED.

Lilac-edged Primula (*P. cortusioides* var. *lilacina*).—This is a very pretty Lilac variety of one of our best hardy, or half-hardy Primulas, differing from its parent species in having large white flowers, delicately margined with soft lilac instead of bright rosy-purple. We have three or four distinct varieties of this fine Primrose, which vary from the normal species and each other principally in size of flowers and variety of colour, the latter ranging from pure white to deep rosy-purple. Grown in pots, it makes an effective decorative plant for the greenhouse, flowering profusely in May and June, and bearing its large flower-heads well up above the fresh green foliage. After flowering, it is very readily propagated by dividing the plants, putting them in good fibrous loam, leaf-mould, and sand, and setting them out in a cool pit or frame. The plant was introduced from Japan, and is commonly known in Continental gardens as *P. Sieboldi*.—*Belgique Horticole*.

Letter-leaved Maranta (*M. hieroglyphica*).—A dwarf-growing and very effective species, somewhat resembling *M. rosea-picta* in habit, but far more striking as a decorative stove plant. Its deep green leaves are borne on purple stalks, and are irregularly striped with broad white lines, which more or less resemble hieroglyphic character. It is a native of shady woods in New Granada, and grows well in an ordinary plant-stove, treated like its congeners.

Rosy Echeveria (*E. rosea*).—This is evidently a near relative of *E. secunda*, and is a charming rosette form, with its glaucous fleshy foliage very symmetrically arranged. It will, doubtless, be useful as a pot plant, or for the margins of flower-beds, as now so much used in our parks and public gardens.

Dagua Philodendron (*P. Daguense*).—A robust climbing species, having great dark velvety heart-shaped leaves, borne on stout red stalks. It is a quick grower, and soon forms a noble and effective plant trained up a wall or over rock-work, either in the plant-stove or tropical conservatory. It bears greenish spathes, shaded with crimson-scarlet. The plant succeeds well under the same conditions essential for the well-being of *Philodendron pertusum*.

Berry-bearing Yucca (*Y. baccata*).—A robust caulescent species, very ornamental, and remarkable for bearing large edible fruits, resembling Bananas. Its deep green rigid leaves are furnished with broad whitish filaments, and in this respect it presents an appearance similar to that of *Agave Schidigera*. The large fruits are of a pale yellow colour, and contain large black seeds in a firm sugary pulp. The species is found in western America, and is not difficult to cultivate, though doubtless it will require some slight protection in this country. A *Yucca*, bearing yellow fruits as large as Bananas, on a stout spike above the deep green crown of leaves, would be an effective object in our conservatories.

Wonderful Masdevallia (*M. Chimera*).—This is one of

the most remarkable species in a genus numbering some fifty or sixty species, and is one of the most curious of Orchids. Its foliage is similar to that of its congeners, but the flowers are very peculiar, having long purple tails and a slipper-shaped lip, like some of the *Cypripedes*. The sepals are of a pale yellow colour, heavily blotched with carmine, and densely set with black hairs round their margins. The lip is white, or very pale yellow. It grows in a cool temperature like all the species at present introduced.

Splendid Tiger Lily (*L. Tigrinum splendens*).—This is a fine, large, richly-coloured form of an old garden species, that grows freely in the open air planted as recommended for the last species. The flowers are borne on a great spike two or three feet high, each recurved segment being of a vivid crimson-scarlet colour, heavily spotted with black. It is an effective plant, in clumps and masses either for the margins of shrubberies or for the herbaceous border, —*L'illustration Horticole*.

Intermediate Buddleia (*B. intermedia*).—An effective hardy shrub, something in the way of *B. curvifolia*, from seeds of which it was obtained, and *B. Lindleyana*, an old species not uncommon in Botanic Gardens. The Buddleias are handsome flowering shrubs for walls or sheltered positions, and deserve more extended cultivation. The present variety bears long spikes of bright purple flowers at the apex of the current season's growth, and is well worth growing.—*Revue Horticole*.

LABELS.

THE collection of plants at Bitton is the best named I have ever seen. A small T-shaped, cast-iron label is used. It is first painted white, then black. When the black has been an hour or so on, the name of the plant is written with a fine but round-pointed bit of iron, thus exposing the white surface below. In



this way effective lettering is produced, and the labels being black are not at all so offensive to the eye as whitened ones. When it is required to read them, moreover, the names are perfectly legible. This mode of writing labels was first published by Mr. Green, gardener to Mr. Wilson Saunders, at Reigate. W. R.

FLOWER VASES FOR DRAWING-ROOMS.

A SHORT time ago I fitted up a few of these, one of which, to my mind, was the most effective I have ever arranged, and for that reason I select it for description. The vase or stand was of plain glass and of the following form:—It had a thick glass stem of about 8 inches high, on the top of which rested a flat dish or tazza, from the centre of which sprang a slender trumpet about 15 inches in height. The tazza was filled with *Stephanotis*, *Eucharis amazonica*, white *Rhodanthe*, spotted *Calceolarias*, Maize-coloured Orchids, and *Bougainvillea*, a long spray of which was twisted round the trumpet. Through these were mixed large fronds of Maiden-hair Fern; and drooping over the edges, so as almost to conceal the vase, were fronds of different kinds of Ferns, several being of the golden section, and so placed as to show up the gold on the back of the fronds. In the trumpet were wild Grasses, long sprays of *Lygodium scandens*, white *Rhodanthe*, mauve and Maize-coloured Orchids, and Maiden-hair Fern. At each side of this stand, and in different parts of the room, were placed specimen glasses, some containing one bloom, and others two or more of the same; but each glass contained a different kind of flower. Amongst others used were the following:—viz., Pink Moss and *Maréchal Niel* Roses, Orchids, *Stephanotis*, *Bougainvillea*, scarlet *Pelargoniums*, blue *Forget-me-nots*, and several others, which blended well with those in the larger arrangement. I used water in the tazza on this occasion, not Moss or sand, as I am generally in the habit of doing, as I did not want to run any chance of the flowers drooping from want of moisture. In water, however, they do not remain where placed nearly so well as when set in Moss or sand. A. H.

WORK FOR THE WEEK.

INDOOR FRUIT GARDEN.

Pines.—As soon as these are cut in any of the pits get the latter thoroughly washed, cleaned, and repaired, the wood-work painted, and the walls lime-washed. The heating apparatus should likewise be seen to and all got into good working order. Remove such suckers as are good and strong as soon as they are ready for separation, with a heel of the old wood attached to them if practicable; pot them at once, and start them in a kindly temperature. Crowns, as a rule, should be avoided unless for the perpetuation of new or scarce sorts, and then only those from first-class fruits ought to be chosen. No matter at what season suckers are ready, they should be potted. Shift all plants that require it, shade them and keep them a little close for a time, and dew them overhead with tepid water through a fine rose or syringe at shutting-up time. Those intended for early summer fruiting should now have their pots well filled with roots and should be kept moderately dry, but at no season of the year absolutely so. Such plants as are about to throw up their fruits enjoy a good growing temperature and a kindly bottom heat, and for this purpose fresh linings and plunging may be necessary.

Vines.—Remove the lights if practicable from the earliest Vineries in which all the wood is thoroughly well ripened and the fruit cut, and paint and repair the house. Where Grapes are now ripe and hanging, precautions should be taken against the ravages of wasps and other depredators, either by placing the clusters in little muslin bags, or, if convenient, covering over all openings for ventilation with sheets of tiffany, hexagon netting, or frigi domo. A somewhat dry atmosphere is necessary where Grapes are ripe and colouring, but still guard against too much aridity. In late Vineries where the berries are swelling, give air night and day, and maintain an equable temperature by means of a little fire-heat, which dispels stagnant damp in dull weather and renders the atmosphere sweet and healthy; give also abundance of water, and sometimes manure-water to the borders, and liberally damp all paths, walls, and floors during the day, otherwise shrivelling soon sets in, and red spider makes its appearance. The earliest pot Vines will now have their canes well browned off and thoroughly matured, and as soon as this is the case they may be turned out of doors and set in well sheltered places where their rods can be kept erect. Turn the pots on their sides when it rains heavily. Other pot Vines may be kept in a growing condition until they are ripe, when they should be treated like the earliest ones.

Peaches and Nectarines.—In order to give late fruits every chance of ripening properly, fully expose them to the influence of the sun. Trim out all shoots not required for next year's work, so as to thoroughly ripen those retained. Where the fruit has been gathered, and the wood is well matured, ventilate the houses as much as possible night and day, and syringe with a solution of sulphur for the eradication of red spider, and use some dissolved soft-soap or Gishurst's compound in the water when syringing for the destruction of scale. Keep the borders moderately moist, for drought under any circumstances is exceedingly deleterious to the trees.

Figs.—The second general crop of these will now be ripening, and consequently the atmosphere should be kept a little drier than usual, and the house more freely ventilated so as to improve the quality of the Figs. Trees swelling their fruits must be liberally fed and syringed, and scale and other vermin eradicated.

Melons.—Prevent over-luxuriance by means of kindly treatment and a little ventilation at night as well as during the day, in preference to stinting the supply of moisture and pinching severely. However, their growth must be regulated and held in check, and attention must be paid to the fertilisation of the blooms. To those whose fruits are swelling, give heavy applications of water, and occasionally some manure-water. If the plants for winter fruiting are not yet planted, no time should be lost, for late-planted ones seldom give much satisfaction.

Cucumbers.—The plants for winter fruiting should now be sown, and cuttings struck from present fruiters to succeed them. Worn out plants may now be cut in rather severely, and the borders mulched and well watered, and the linings renewed; the plants soon make a fresh start, and bear well for some time yet. Attend to the usual routine of thinning the leaves, shoots, and fruits whilst in a young state.

KITCHEN GARDEN.

August, like March, is a month of sowing and transplanting. If the weather is dry, then the seeds require moisture; and in order to best ensure it, let the ground be deeply dug, levelled, and rolled, and sown with as much expedition as possible, so as to prevent it from parting with its moisture; a mat or some rank litter placed over it until the seeds begin to germinate will also be found useful

in periods of draught. The hoe should be in constant use, and all weeds and vegetable refuse should be collected into a heap, where by mixing it with lime and by means of frequent turnings, insect life and also that of the seeds of weeds may be destroyed, and decomposition accelerated. Hoeing and surface stirring should be rigorously persevered in, and slugs and insects should be kept in check by means of dressings of soot and lime. Never permit vegetables to "run" to seed, unless required for that purpose, and then they should have a place set apart for them. Manure well and trench every spare piece of ground, which if uncropped should be ridged. In dry weather abundantly water all kinds of crops that will be removed before winter, but to such as remain during that season water should be very judiciously applied, as too much induces soft growth liable to be destroyed by frost.

Angelica.—Sow as soon as the seeds are ripe, and keep the beds watered until the seeds germinate; a cool moist situation suits them best.

Anise.—Gather the seeds of this as soon as they are ripe and dry, and store them for sowing in April. Anise seeds are a good deal used in confectionary and for medicinal purposes.

Artichokes.—Cut down such stems as have yielded heads; and, by mulching the ground about the plants with manure, and giving plenty of water, a good succession of heads may be obtained until October. In the case of young plants, too liberal treatment is not advisable, as it makes them too soft to winter well.

Asparagus.—This requires no more attention than that of keeping the ground clean and looking after the larvæ of the Asparagus beetle (*Crioceris asparagi*).

Beans, Broad.—As soon as the Long Pods and Windsors are gathered, clear away the plants, dig the ground, and plant therein Endive, Lettuces, Coleworts, and late Celery, or sow Turnips on it. Give plenty of water in dry weather to the latest crop.

Beet.—Use the largest roots first, and remove all plants throwing up flower spikes. Sow some of the white or silver-leaved Beet for a spring supply.

Borecole or Kale.—This makes a fine succession to the early Potato crop, and is, perhaps, the best of all vegetables for growing on a border with a northern aspect. A few seeds of it may be sown in the first fortnight of the present month for spring planting. Some of what is called Buda Kale may also be sown in the last week of this month for the same purpose.

Broccoli.—Plant out late Broccoli, and remove all other crops from amongst it as soon as they are ready. Sow a few seeds of Snow's Winter White Broccoli about the middle of the month for spring planting; it will come into use after the early spring Cauliflower.

Cabbage.—The principal crop for spring use should now be sown. In early localities the 12th of the month is the general time for sowing it, but in late districts it is best to sow a little earlier, if sown too early the plants are apt to run in spring, and if too late they never attain full development. Good small sorts are preferable to large growing varieties, in quality as well as convenience for table use; the following are excellent kinds, viz., Enfield Market, Early York, Shillings' Queen, Nonpareil, and Little Pixie. Sow also some Red Cabbage seeds; the Red Dutch is the common large sort, but the Dwarf Red and the Utrecht Red, although smaller in size, are superior to the Dutch in quality. Towards the end of the month weed the beds and where too thick thin a little. Transplant all plants remaining from early sowings, and also Cock's Hardy Green for Coleworts in the winter.

Cardoons.—A few of the earliest and strongest of these may be blanched towards the end of the month. Get well-twisted hay or straw bands, and let one person hold the leaves together in an upright position, whilst another encircles them tightly with the bands, then earth them up like Celery. They are fit for use about three weeks after they are earthed up.

Carrots.—In the first week of the month a sowing of Early York and Early Dutch should be made, for drawing in winter and spring, in a situation where they can be conveniently protected in severe weather in winter.

Cauliflower.—Sow this out of doors in a sheltered place from the 20th to the end of the month, and prick the young plants off into frames before the approach of frost. Differences of opinion exist as to the proper time for sowing the autumn crop, but the period just indicated is that generally adhered to. It is certain that gross plants, which are generally the result of early sowings, are not only liable to suffer from damp in winter but frequently "button" in spring. Mr. Barnes, late of Bicton, an excellent cultivator, prefers sowing at once in frames in the beginning of October to

sowing out of doors this month. In dry weather water advancing crops to prevent premature hearting.

Celery and Celeriac.—Earth up early plantings of these as they appear to require it. Water all plantations abundantly, and plant out a few more rows for a late crop. Remove suckers from the roots, and towards the end of the month draw a little earth over some of the strongest bulbs of the Celeriac to whiten them.

Chervil.—Sow this broadcast, and cover lightly with fine soil.

Chicory.—Thin advancing plants of this, and sow a few more seeds for small salads.

Coriander.—Gather the seeds of this as soon as they ripen, and prepare for sowing next month.

Corn Salad.—Sow this broadcast or in drills six inches apart, for late autumn and winter use.

Cress.—Sow the American kind for late autumn and winter use; and the common Cress fortnightly or weekly, according to the demand.

Dill.—Sow this, where the plants are to remain, as soon as the seeds are ripe.

Endive.—Plant out this in quantities proportionate to the demand for it, and tie up such heads of the earlier put-out plants as are nearly fit for use. Sow a few seeds for a late crop.

French Beans and Scarlet Runners.—Never permit the pods of these to get at any time over-large, such being detrimental to those that are coming on in succession, and give the plants plenty of water in dry weather. Pick the points of Scarlet Runners when not supported by means of stakes.

Garlic and Shallots.—Lift and dry the bulbs of these as soon as they are ripe, and then string them on hay or straw ropes by means of their own withered leaves, after that hang them up in a fruit room or Onion house.

Leeks.—Transplant the late crops of these during moist weather, and give them plenty of water at planting time.

Lettuces.—About the middle of the month sow Bath Cos, Brown Egyptian, Green Paris Cos, and Hick's White Cos; also Lee's Green, Hardy White Dutch, and the Hardy Hammersmith, all Cabbage sorts, for winter and spring use.

Mustard.—Sow every few days as required.

Nasturtiums.—The leaves, flowers, and young shoots of *Nasturtium* may be used as salads, and the young seeds and flower-buds pickled in vinegar are used as capers. In order to prolong the flowering season plenty of water should be given.

Onions.—Sow about the 12th of the month for spring transplanting, as well as for drawing young, the Tripoli, White Spanish, Portugal, Two-bladed, and the Silver-skinned. The Welsh Onion is a useful sort for sowing in the beginning of this month for furnishing salads in spring. With a long rod bend down the leaves of Onions all in one direction, in order to increase the size and accelerate the maturation of the bulbs. When fit for harvesting draw them, bundle them at once, and hang them up in an airy shed to dry. Leaving them lying on the soil gives them a "strong" taste.

Parsnips.—Sow some of the hollow-crowned to stand the winter, and to come into use in spring.

Peas.—Do not encumber the ground with these after they get too old; on the contrary, trench the soil and prepare it for Leeks, Spinach, or the Cabbage tribe. Young crops must be liberally supplied with water.

Purslane.—Sow some seeds of this for salad; gather the oldest of the first sowings and treat them as pot-herbs.

Radishes.—Sow the different kinds of these in moderately cool situations. During the next two months they will be found to be first rate. Some of the black and white Spanish should likewise be sown for winter and spring use.

Spinach.—Sow a main crop of Spinach in the first of the month, another about the middle, and a third in the beginning of next month. The Prickly-seeded and Flanders are excellent sorts for standing the winter.

Tarragon.—Tarragon may now be increased by means of cuttings made of the side shoots, and planted under handlights.

Tomatoes.—The usual routine of stopping laterals, preventing an overgrowth of leaves, and watering heavily, must still be pursued in regard to these, and when the fruit has attained full size, it may be fully exposed to the influence of the sun, in order to better ripen and give it colour. Propagate a few cuttings of Tomatoes, and winter them in cool quarters in store pots. These, if re-potted and kindly treated in spring, are earlier and much more certain fruiters than seedlings.

Turnips.—Early in the month sow some of the small quick-growing varieties of Turnips, such as the Yellow Finland, White Stone, and Strapleaf, on ground after Potatoes or Peas. By timely thinning and frequent surface stirrings, together with a dressing of guano in showery weather, excellent and sweet Turnips can always thus be had.

THE BOTANIC GARDENS, ST. PETERSBURGH.

THE fiftieth anniversary of the establishment of the Imperial Botanic Gardens at St. Petersburg was recently celebrated by several officers of State and the officers and *employés* of the gardens. The origin of these now extensive gardens (like that of the celebrated Jardin des Plantes at Paris) was a simple "apothecaries' garden" founded by Peter the Great on one of the islands in the Neva in 1714. By the year 1823 this garden had increased so far as to occupy its present large area and comprised a department for medicinal plants, another for botany, a school of arboriculture, and a few plant houses in not very good condition. The entire number of species of living plants which it contained at that date amounted to no more than 1,500. In this year, at the suggestion of the Minister of the Interior, Count V. P. Kotschubei, the Emperor Alexander I. issued a ukase by which all the separate departments of the old "apothecaries' garden" were thenceforth to be united into one institution, under the title of "the Imperial Botanic Gardens." This was carried out under the superintendence of Professor Fischer, who was appointed the first director, and at the same time a sum of 100,000 roubles was granted for the purchase of living and dried plants, another sum of 250,000 roubles for the erection of plant houses and dwelling houses for the officials, and a further sum of 68,270 roubles to meet the miscellaneous expenditure of the year. The gardens now contain more than 21,000 species of living plants, and also include a fine herbarium of dried specimens of over 160,000 species of plants; a botanical museum containing 25,500 specimens of fruits and seeds, 59,047 specimens of wood and timber, and 1,906 specimens of fossil plants. Besides these, there is a laboratory of vegetable physiology, and a fine library of 15,552 volumes. Professor Fischer died in 1852, and was succeeded by C. A. Meyer, who died in 1855. The present director, Dr. E. Regel, was then appointed, and to that gentleman, whose name is distinguished in horticultural and botanical literature, much of the credit of the present flourishing condition of the gardens is justly due.

The foregoing short account is an abstract translated from an article in the May number of the "Gartenflora." W. M.

Market Carts.—I have observed in the papers Mr. Bohn's action in respect to the filthy condition of some of the carts that convey fruit to Covent Garden Market. Somewhat in confirmation of this, allow me to state what I saw in Kensington one day last week, from the top of an omnibus, viz:—A market-garden waggon loaded with manure, and on the top a number of fruit baskets; not empties, but filled, because I distinctly observed green leaves on their tops, secured, as is usual in the case of fruit baskets, by cross pieces of stick. There were probably a score of bushel baskets thus placed on the top of the manure. This incident only confirms the carelessness exhibited in such matters, and it is hardly possible to realise what must have been the state of the fruit, pervaded by the steaming exhalations of a large waggon-load of manure under a hot July sun.—J. H. RAVENSHAW, *Derby Lodge, East Sheen.*

COVENT GARDEN MARKET.

AUGUST 15TH.

The supply and demand, as a rule, are good, and high prices for good articles are readily obtained. Strawberries are done, and Raspberries are getting short. Pears, Apples, Plums, and Nuts are largely imported and in good condition. Pines, Grapes, Melons, and Cucumbers maintain their former excellence, and of Peaches there is a fair supply, but Apricots are somewhat scarce. Gooseberries arrive in considerable quantities, but bush fruits, as a rule, are now decreasing in quality and quantity. The supply of vegetables is large and the quality excellent, but in many cases French Beans and Scarlet Runners are too old. Amongst flowers, Lilies, Zonal Pelargoniums, Cockscombs, Coleuses, yellow Calceolarias, Oleanders, &c., form the principal part.

Prices of Fruits.—Apples, per doz., 6d. to 1s.; Apricots, 2s. to 4s. per doz.; Cherries, per lb., 6d. to 1s. 6d.; Chillies, per 100, 2s.; Currants, per sieve, 3s. 6d. to 6s.; Figs, per doz., 2s. to 4s.; Gooseberries, per quart, 3d. to 6d.; Grapes, hot-house, black, per lb., 1s. 6d. to 5s.; Muscats, 2s. to 6s.; Lemons, per 100, 8s. to 11s.; Melons, each, 2s. to 6s.; Nectarines, per doz., 6s. to 10s.; Oranges, per 100, 12s. to 21s.; Peaches, per doz., 10s. to 20s.; Pears, per doz., 2s. to 4s.; Pine-Apples, per lb., 3s. to 6s.; Raspberries, per lb., 4d. to 1s.; Tomatoes, per doz., 1s. to 3s.; Walnuts, per bushel, 6s. to 10s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 3s. to 6s.; Beans, Kidney, per half sieve, 2s. to 3s.; broad, 2s.; Beet, per doz., 1s. to 2s.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 8d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 4s.; Cucumbers, each, 4d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horse-radish, per bundle, 3s. to 4s.; Leeks, per bunch, 4d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 4s. to 6s.; button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 9d. to 1s.; Potatoes, per bushel, 3s. 6d. to 5s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Scorzonera, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, 4d. to 8d.; Vegetable Marrows, per doz., 1s. to 2s.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

A NEW DOUBLE POINSETTIA.

EVERY one familiar with plants knows the *Poinsettia pulcherrima*. Botanists call it *Euphorbia*; but it will probably retain the old name of *Poinsettia* among gardeners. In this plant the inconspicuous flower-clusters are surrounded by several floral leaves or bracts, each 3 or 4 inches in length, and of the most intense scarlet imaginable. When we say that this new *Poinsettia* has not only the original series of bracts, but that the centre, ordinarily occupied by the flowers, is filled up with hundreds of smaller bracts upon short stems, diminishing in size until the smallest are only an inch long, florists will see that here is a novelty indeed. This remarkable plant was discovered by the indefatigable collector, M. Roezl, who found it in a small Indian village in the Mexican State of Guerrero in May last. He modestly says that no botanist or florist would believe his description of this magnificent plant; but he has brought dried specimens, which were examined by the editor of the *American Agriculturist*, who says that M. Roezl is within bounds when he states that the "flower-cluster" is often 14 to 18 inches in diameter and about 6 inches high. M. Roezl states that the smallest bracts are scarlet tinged with violet, and that the flowers in Mexico last from December until April. The original *Poinsettia* is a brilliant plant, with the leaves near the flowers taking on all the delicacy and brilliancy of petals, and we now have a sport in which the flowers themselves are superseded by clusters of bracts, making it about as different from the normal sort as a Cauliflower is different from a Cabbage. In our reduced engraving we can only give a general idea of a cluster, but a careful examination of the dried specimens shows it to be no exaggeration. This will certainly take a high rank for warm conservatory decoration, especially as it holds its colour—we can hardly say bloom—so long, and for florists and bouquet-makers the clusters of small and brilliant bracts will be invaluable. The large bracts of the old sort can only be used in large bouquets and decorative pieces, while this will allow the same brilliancy to be imparted to smaller work. A house filled with the ordinary *Poinsettia* in full perfection forms a gorgeous display of colour, and we can hardly imagine the brilliancy that would be presented by an equal number of this new kind. The small stock of the plant is in the hands of Mr. J. Buchanan, of New York, who will no doubt send it out ere long. Our illustration is from the *American Agriculturist*, there being as yet no plants or dried specimens in this country.



New Double Poinsettia.

HORTICULTURE IN THE MIDDLE AGES.

IN a paper read by M. le Comte de Gomer before the Académie of Amiens, the following outline of the condition of horticulture in the Middle Ages is deserving of some notice. In those days gardening appears to have been chiefly confined to the culture of vegetables and fruit, the commencement of floriculture to any noticeable extent dating from a much later period. After some preliminary remarks on agricultural matters, M. le Comte says:—"Without going further than France, if we examine into the state of horticulture as it was practised in the time of Charlemagne, we shall find in the records, which are known as the 'Capitulaires,' an enumeration of the useful plants which the Emperor wished to see grown in his gardens. Amongst them are most of the vegetables with which we are now familiar in our kitchen gardens, such as Fennel, Chervil, Garlic, Parsley, Shallots, Onions, Cress, Endive, Lettuce, Beet, Cabbage, Leeks, Carrots, Cardoon, French Beans, Broad Beans, Chick-Peas, and Lentils. In the thirteenth century all sorts of vegetables were known under the common name of 'aigrun,' under which were included Oranges, Citrons, and other acid fruits. Saint-Louis added to the list Nuts, Walnuts, and Chestnuts, and when the guild of the fruiterers of Paris received their charter in 1608, they still bore the designation of 'sellers of fruit and aigrun.' In the thirteenth century a species of Melons, known as Pompons, was much grown; and Languedoc was famous for its Sugar-Melons, which, according to Charles Etienne and Liébaut, were so named because the cultivators watered them with sugar or honey and water. Amongst Cabbages, the most celebrated was the Chou de Senlis, the leaves of which, says an old author, exhaled a more agreeable odour than Musk and amber. This species appears to have perished when the aromatic herbs, which were so much in request in the kitchens of our ancestors, fell into disrepute and ceased to be extensively cultivated. The chief favourites amongst these herbs were Marjoram, Caraway, Basil, Coriander, Lavender and Rosemary. The Cucumber was also cultivated, and Lentils were pretty extensively grown, but these were not in such high favour as the small Beans which were used at entertainments of the first class. Peas in the sixteenth century were considered a royal dish. Turnips and Lettuces were much grown; among the latter the most esteemed was the Romaine (or Cos), which owes its name to the circumstance that the seed of it was sent from Rome by Rabelais, when he was living in Italy with Cardinal du Bellay, in 1537. Western Europe was originally very poorly supplied with fruits. Most of the kinds which are now grown were introduced from Asia by the Romans. The Apricot was brought from Armenia, the Cherry from the northern parts of Asia Minor, the Pistachio tree and the Plum from Syria, the Peach and the Walnut from Persia, the Citron from Media, the Filbert from Pontus, the Chestnut from Catana, a town of Magnesia, and the Almond from various parts of Asia. The Pomegranate, according to some authors came from Africa, according to others from the island of Cyprus; the Quince from near Cydon, a town of Crete; while the Olive, the Fig, the Pear, and the Apple were all introduced from Greece. We learn from the 'Capitulaires' of Charlemagne, that almost all the fruits above-mentioned were grown in the gardens of that monarch, and that even at that early period many varieties had been produced in the course of cultivation. Amongst them, however, we do not find the Reine Claude or Greengage, nor the Bon Chrétien Pear, a variety first presented by Saint François de Paul to Louis XI."

NOTES OF THE WEEK.

— OUR seedsmen must not be surprised if they receive orders from France for Potatoes with strange names, as we find in a very good book on Parisian market-gardening a laudatory allusion to an old friend, which is described as the "L'Abstone Quidey!"

— THE fine little bit of "carpet" and sub-tropical bedding in front of the gardener's lodge in Kensington Gardens is now well worth a visit from all interested in bedding arrangements.

— LARGE quantities of Greengage Plums (Reine Claude) are now being sent to Covent Garden Market. This is one of the finest of all fruits for preserving, and appears to be tolerably plentiful and reasonable in price this season.

— THE Peach gardens in the neighbourhood of Montreuil are just now in excellent condition, and well worth a visit, either from a cultural or commercial point of view. In the grounds of M. Chevalier, more especially, the culture of the Peach for market purposes is carried out to perfection; the healthy well-trained trees being covered with an abundance of fine fruit.

— THE splendid collection of Agaves, Fourcroyas, and Beshornias, belonging to M. De Jonghe Van Ellemest, will be sold by auction on the 22nd of next month, at his château of Overduin, Oostkapelle, lez Middelbourg, in the province of Zeeland, Holland. The collection contains 318 specimens of all the known species of the above-named plants, some of the Agaves being of unusually large size.

— THE Paris markets are now well stocked with fruit, consisting of Chasselas Grapes of an amber colour tinged with pink, Figs, Rock Melons, Peaches, Pears, and Apples. Vegetables are both plentiful and well grown; they consist of Lettuce, Chicory, Radishes, Turnips, Black Spanish Radish, Spanish Haricot Beans, French Beans, Brinjals or Aubergines, and Vegetable Marrows and Gourds. Radishes and Endive are as crisp and as fresh as in the spring.

— WE have received from Mr. George Cooling, of Bath, specimens of a seedling Apple, which promises to be an acquisition in the way of an early table variety. It is handsome in shape, which is not unlike that of the Nonesuch, but it is considerably earlier than that sort; it is of medium size, very prettily streaked with red, and is reputed to be a sure and heavy cropper.

— At a late meeting of the California Academy of Natural Sciences, Dr. Kellogg said he had just returned from under the shadow of the finest evergreens ever grown. He hoped the secretary would record the fact that there were in California golden Chestnut trees (*Castanea chrysophylla*) from 100 to 200 feet high, 4 to 6 feet in diameter, and with a clean trunk of from 50 to 70 feet.

— ONE of the tanks in the Jardin des Plantes at Paris is literally golden with the lovely blossoms of the *Limncharis* (*Hydrocleis*) *Humboldtii*, and its bright-looking leaves form a floating carpet, of the richest green, on the surface of the water. With us, this fine water plant is generally kept in stoves, or, if outside, in artificially heated water; but at Paris it has no such advantages, thus indicating that it is much more hardy than people generally suppose it to be.

— THE neat examples of Standard Hibiscus plunged out in the gardens of the Tuileries, at Paris, are now flowering freely, as are also fine plants of Pomegranates in large tubs. A magnificent pair of Paulownias in the Jardin des Plantes are also very interesting, being heavily loaded with clusters of pale green fruit, which, at some little distance, look like bunches of Muscat Grapes. One of these trees is a perfect specimen 30 feet or more in height, and well covered with fresh green foliage.

— MR. SMEE's letter in the *Times*, on the subject of "Sewage-Grass," has called forth replies from a number of gentlemen, whose experience quite disproves the conclusions at which Mr. Smee has arrived. The aggregate of the evidence on the other side goes to substantiate the fact that sewage, when properly applied, not only produces excellent crops of grass, corn and vegetables, but that it is, also, not in the slightest degree injurious in any respect. On the other hand, as Mr. J. Bailey Denton well remarks, "if the land was 'flooded' with sewage—sewage containing the germs of disease—and the growing grass was then partially covered with it, so that the diseased matter could adhere to the blades to be swallowed by the cows when they consumed the grass, it is quite within the range of possibility that the productions of a sewage farm may be infectious, just as the grass of an ordinary farm coming in contact with the same matter would be; but, in the absence of these conditions, the chances of their being so are as remote in the one case as in the other. In all properly-conducted sewage farms care is taken not to 'drown' the land, but simply to give it as much liquid as it will absorb, and no more. By this means vegetation is best fed, and the sewage itself purified, without its coming in contact with any other part of the plant than its roots." It remains for Mr. Smee to consider whether

he has not been too precipitate in delivering an *ex cathedra* judgment on the question. For ourselves, we can only say that some of the most delicious Strawberries we have ever tasted were grown this year on sewaged ground.

— THE fronds of that handsome Fern, *Adiantum Hendersoni*, described at p. 64, Vol. IV., of *THE GARDEN*, are finely figured in the May number of the *Illustration Horticole*.

— THE effect of *Acer Negundo variegatum*, when contrasted with dark foliaged evergreens, is just now very fine, and the plant is also valuable for bedding and sub-tropical purposes.

— SOME idea of the estimation in which Mignonette is held by the French may be formed from the fact that one nurseryman in the Rue Montgalet sells about 40,000 pots of this plant every year.

— FLOWERING Begonias, principally hybrids of the B. Saundersoni section, are largely used for bedding purposes in the Parisian gardens. Many of the foliage kinds, of which B. Rex and B. grandis may be taken as types, are also used with excellent effect.

— LARGE quantities of the Mirabelle Hâtive, or "Sugar Plum," are now being brought to the Parisian fruit market. It is a small round fruit, of a pale yellow colour, covered with white bloom, and often spotted with crimson on the side next the sun. When thoroughly ripe it is very sweet, and is an excellent variety for preserving.

— A CURIOUS fact in natural history important to Tea planters has been discovered—namely, that locusts will not eat Tea-leaves. A Darjeeling paper tells us that very large flights of locusts recently settled on the Tea gardens, reddening the surface of the ground by their numbers; but in a few hours they passed on, having devoured every blade of Grass, but leaving the Tea bushes absolutely intact!

— "THE Grape harvest in France," says the *Globe*, "promises to be unusually fine this year. How large a share the Vineyards take in the produce of the country, and to what an extent they form the wealth of all classes, we may judge from the fact that there are 2,300,000 Vineyard proprietors in the Republic. In all the sunny land of France there are only eleven departments which do not grow the Vine, twenty cultivate Grapes for home consumption, and fifty-eight for export.

— A NEW square has just been opened in Paris, near the Rue de Sèvres, and named the "Square des Petits-Pères." It has been laid out with the object of affording a cool and shady place of resort in summer; and, to this end, the broad walks which surround the central space of smooth and verdant turf have been planted on both sides with Plane trees. A border 6½ feet wide runs round the square inside the railings. This is planted with a variety of shrubs, interspersed with flowering plants. Six fine Elms of large size, which have grown for many years on the ground now enclosed, have been preserved, and contribute in no small degree to the appearance and useful purpose of the new square. It should not be forgotten that this, like all other squares in Paris, and unlike any of our London squares, is open, in the most unrestricted manner, to all classes of the public.

— THE causes of "Hay fever," so long a vexed question with the faculty, are very satisfactorily explained in a recently published treatise, entitled "Experimental Researches on the Causes and Nature of Catarrhus æstivus (Hay fever or Hay asthma), by Charles H. Blackley, M.R.C.S., England. By a number of experiments, in all of which Mr. Blackley himself was the subject, and which are detailed at length in the work, he has proved most conclusively that the sole cause of "Hay fever" is the inhalation of the invisible floating dust of the pollen of Grasses, &c., which in the Hay-making season fills the air in and near Hay-fields.—"The pollen of a number of the Grasses was first tried, and in every one of these trials this gave distinct and unmistakable evidence of its power to disturb the healthy action of the respiratory mucous membrane. When a small portion of pollen, just sufficient to tinge the tip of the finger yellow, was applied to the mucous membrane of the nares, some of the symptoms of 'Hay fever' were invariably developed, the severity and continuance of which were dependent upon the quantity and upon the number of times it was used. In an experiment made with the pollen of *Lolium italicum*, the first sensation produced was that of a very slight degree of anaesthesia of the spot to which this had been applied. This was followed by a feeling of heat, which gradually diffused itself over the whole cavity of the nostril, and was accompanied by a slight itching of the part. After some three or four minutes a discharge of serum came on, and continued at intervals for a couple of hours. The mucous membrane appeared to swell, and eventually became so tumid that the passage of air through the nostril was very much impeded." We have not space to do more than direct attention to this really original and instructive work, which effectually disposes of all other theories on the subject, and removes all uncertainty as to the true cause of "Hay fever."

THE GARDEN IN THE HOUSE.

A WELL-PROPORTIONED FLOWER VASE.

IN choosing a vase, people are too apt to be misled by the form and beauty of the objects before them, and to forget, or at the least to think far too little of, their suitability for the display of flowers to the best advantage. If glass vases are coloured, the assortment of flowers that will look well in them must necessarily be restricted; while vases of clear colourless glass and of white glass—technically termed “flint” and “opal”

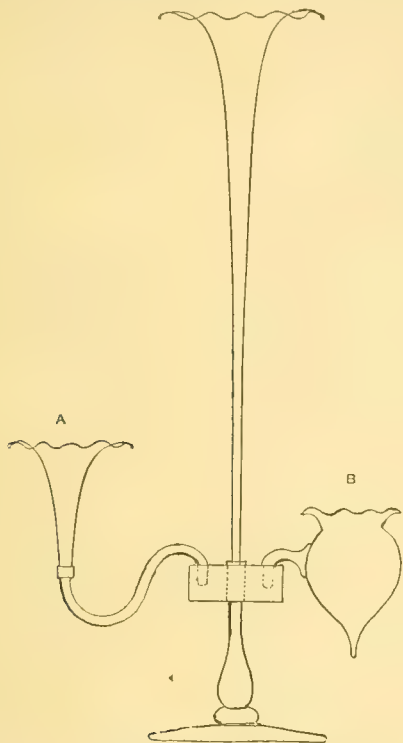


Fig. 1.—Convertible Dinner-table Vase (sectional view.)

—present no limits to the variety of coloured flowers that can be arranged in them. When vases are wanted for special purposes, the question of proportion comes into consideration, by which I mean not only proportion in the different parts of

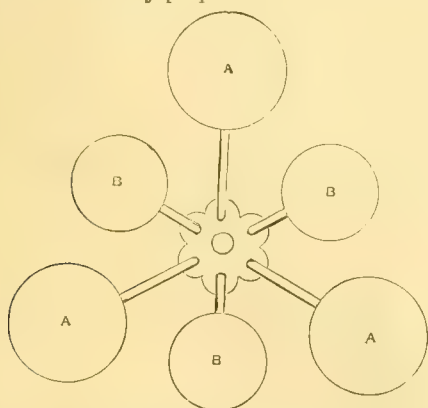


Fig. 2.—Diagram showing mode of fixing Branch Vases.

the vase so as to ensure an elegant form in the unfurnished vase, but also proportion in reference to the size of the table upon which it is to be used, and to the size of the other objects which are to occupy the same table. There are some forms of vases that look well in a drawing-room, which are quite unsuitable for a dining-table; on the other hand, there are very many beautiful forms of dinner-table vases now to be had in the glass shops, not one of which, that I can remember,

would be out of place in a drawing-room or boudoir; in short, if a vase is really suitable for a dinner-table, it is sure to be fit for any other table or place of corresponding size.

The accompanying sketches will illustrate the subject of proportion between the different parts of a vase. Fig. 1 gives a sectional view, and shows only two of the six branch-vases, of which fig. 2 gives a plan. The form is one of the latest introductions, and is not yet very common. But if those who possess it will compare their vase carefully with these sketches, they will find many points that do not correspond. The general arrangements are the same; the difference is in the proportions. The pedestal is 5 inches high, and the central trumpet, being 17 inches, makes (when screwed into the pedestal) the whole height of the vase to be 22 inches. The top of the branch-vase, A, is 9 inches above the table, and the lowest part of its supporting arm descends to $3\frac{1}{2}$ inches from the table; its rim is $3\frac{1}{2}$ inches across, and its edge is $3\frac{1}{2}$ inches from the central tube. The top of the branch-vase, B, is 7 inches, and its lowest point $2\frac{1}{2}$ inches, above the table; its rim is 3 inches across, and its edge is 2 inches from the central tube. Having had one made of these proportions, and used it frequently, I can speak confidently of its superiority over the other kinds of this form of vase. These sketches will also serve to illustrate the subject of convertibility, a very important one to those of limited means and limited accommodation in the glass-cupboard. The plan shows that there are six branch-vases, three of A, and three of B, and they are there arranged alternately. But from the nozzles of the branches being all of one size, it is clear that these branch-vases may be re-arranged in various ways, according to the kinds of flowers and foliage available, and according to the position which the vase is to occupy. Thus, if it is to go in the centre of a table, you must either use three or all six branches, and if you use only three, then they must be all alike, for it would destroy the symmetry of the vase to use two of A and one of B. But if you want to use it upon a side-board, where it only requires to be “dressed to one face,” you have then the option of employing either six, five, three, or two branches at a time. If wanted for a mantel-piece or shelf, it would probably be found best to use one of B between two of A, which would bring the three vases nearly in a straight line. For a still narrower place, a pair of either A or B, placed on opposite sides of the central tall vase, would be the best arrangement.

This vase was made for a small dinner-table, either round, square, or oblong, suitable for a party not exceeding eight in number. It is a great favourite with me, principally because it can be easily and quickly dressed, and requires only a very few flowers, a dozen fronds of Maiden-hair, some pieces of Grass, and a spray of some graceful climber, to produce a pretty light effect.

W. T. P.

Remove the Flowers.—All lovers of flowers must remember that one blossom allowed to mature or “go to seed” injures the plant more than a dozen buds. Cut your flowers then, all of them, before they begin to fade. Adorn your room with them; put them on your tables; send bouquets to your friends who have no flowers, or exchange favours with those who have. On bushes not a seed should be allowed to mature.

Flowers in Mexico.—One thing which strikes one pleasantly in Mexico is the wonderful abundance of flowers. All the year round crowds of Indians sit at the street corners in the early morning, making and selling for a real (6d.), bouquets which in London or New York could not be got for a guinea. Roses, Verbenas, Heliotropes, and Carnations grow like weeds; and, besides the made-up bouquets, the Indians bring down packs, on their backs from the mountains, of the Flor de San Juan (Bouvardia), a flower like a white Jessamine, and for a quartilla (1½d.) you can buy an armful of it, which will scent a whole house for a week. Our rooms were always fragrant with the bouquets which came in fresh every two or three days, and sometimes round the hanging baskets in the windows a lovely humming-bird would hover, and dip his long bill into the flowers for honey.

Colouring Flowers by Chemical Means.—The *American Naturalist* gives an abstract of a paper by E. Puscher on this subject. The flowers are to be placed in a glass funnel, which is inverted over a plate containing a few drops of sal ammoniac solution. After a few minutes most blue-violet or bright carmine-coloured flowers change to green, dark carmine flowers become black, white change to sulphur-yellow. The flowers, plunged into fresh water, retain their new colours for 2–6 hours, and then lose them.

THE FRUIT GARDEN.

GRAPE GROWING AT THORESBY.

VINES, like sentient creatures, have their likings and dislikings; one variety doing splendidly in one place, and another in another place; and yet, if each of these places were scanned critically, we should, in all probability, find some varieties that refuse to grow in them at all, or at least not so as to be considered "a success." At the present time, that much-abused Grape the Madresfield Court may be seen at Chatsworth bearing 5 and 6 lb. bunches, and the Mrs. Pince, Black Muscat, equally good; and yet in a note from perhaps the best Grape authority in the country I read, "out of more than a thousand Vines sent out this spring, I have not sold half a dozen of either Mrs. Pince or Madresfield Court." Mrs. Pince, properly grown, is unquestionably the finest-flavoured winter black Grape we have, and the best keeper. Of this, I think, there can be no question; but some one may exclaim, "It won't colour!" Won't it? Grow it properly and there need be no complaint on that score. Another noble Grape is Melville's Muscat Champion, sent out by Messrs. Veitch; but because it is not black it also is not in favour. Why not on the same score exclude Grizzly Frontignan, Purple Constantia, and many others? If the matured colour of a good Grape is red or purple, why grumble because it won't come black? Speaking of the caprices of the Vine, we know that the Black Muscat, or more popularly the Muscat Hamburg, is not to be depended upon when grown on its own roots; but, when grafted on the Hamburg, it succeeds perfectly, especially on the red sandstone formation. Few would suspect the hardy vigorous Alicante of the same caprice, yet at Thoresby Park, where Grapes are admirably grown, on its own roots it positively refuses to grow at all; but when grafted on the Black Monukka it produces bunches such as are rarely seen. The soil in that part of Robin Hood's hunting ground, though rich, is very light. Vines grow well in it for a few years, but, after bearing half a dozen crops, are worn out. The success of the Alicante, as above stated, prompts Mr. Henderson to use the Black Monukka generally as a stock, and in renewing his next house he intends to graft all the varieties on it, and I predict he will do so with success. A friend suggests that the Mustang or wild Grape of the Texan prairies, would be worth importing for the same purpose, and it is more than probable he is right. There it scrambles from tree to tree in uncontrolled luxuriance. The success of the Alicante at Thoresby is a fact worth marking, especially by those who have light soils to contend with. The ruinous effect of sheet-glass, as used at Thoresby, is something lamentable. Where they are not shaded, the Vine leaves are the colour of brown paper and completely dried up; and a superb lot of Pines, just pushing up for winter use, are quite disfigured from the same cause; indeed, so convinced is Mr. Henderson of the impropriety of using this glass that he is now permanently frosting it with a preparation of sugar of lead, oil, and "dryers." Pines at Thoresby are superbly grown, the fruiting plants for next season being more like young Aloes than Pine plants as they are usually seen; in fact, every plant is a specimen fit for any conservatory. With these facts before us, and the further fact that where the experiment has been tried for nearly twenty years, Grapes colour better under patent rough plate than under sheet glass, it behoves people to pause before they use the common kind, especially as, in these times of dear fuel, it is important to know that strong glass will be found 5° to 7° warmer than the common kind, and yet is not dearer.

THE GOLDEN CHAMPION GRAPE.

Mr. Fish's critique on this Grape (see p. 134) is very severe. If you will examine and taste the few berries which I send you from the Vineries of Mr. W. Newton of this place you will see that it is possible to grow the Golden Champion, so that it will shrivel instead of rot. The Golden Champion, like some other of the new Grapes, is the victim of bad gardening. It requires peculiar treatment, and no one appears to have taken the trouble to discover what that treatment is. The Champion, like its parent the Canon Hall Muscat, is of low maturative force, or, in other words, it makes

gross growth, and our summers are too short to enable it to thoroughly ripen its wood. The consequence is immature shoots and a gross plethoric growth without the force necessary to complete maturation. In the same house with the graft from which the fruit sent was taken is a Vine of the Golden Champion on its own roots, and the Grapes are worthless, but the fruit sent was cut from a graft on the Raisin de Calabre, and what in point of colour, finish, and flavour can be more complete? The berries are not large, but for quality and finish they are superior to the best I have ever seen from Mr. Thomson himself. I therefore conclude that this Grape wants cultivating, and no doubt with its grossness subdued, thorough maturation of the wood in the autumn, and Muscat treatment it may yet become a useful Grape, as it undoubtedly is a most exquisitely flavoured one. As a means to that end Mr. Newton has supplied me with the first fact, and he has suggested that even double or treble grafting upon the Raisin de Calabre might be further beneficial. Of the influence of stock upon scions we have instances in other fruits, and in some Grapes, as for example the Black Muscat upon the Black Hamburg.

WILLIAM P. AYRES.

Newark, Notts.

Influence of the Stock.—A writer in a late article alleges that "It is a stated fact that the stock has no influence to change the fruit borne by grafts." Is it so? In an old orchard we have a favourite Apple called Pomme Royale. It ripens in October, is inferior in size, slightly acid, green, tender, and juicy, and of exquisite flavour, relished by everybody. Forty years ago, perhaps, scions were cut from it and inserted in three fully-grown seedling trees. The natural fruit of the first was a small juicy russet, exclusively sour. That of the second was a larger Apple, partially red, not quite as sour as the first, and bitter to the taste. The third tree produced a sweet Apple, of pale green colour, dry, and corky. When the grafts came to bear, fruit from the first compared favourably with that of the tree from which the scions were taken. That from the second tree was not as good, and would be sometimes slightly tinged with red; yet it was tolerable. The third tree produced larger and fairer fruit than either of the others, but it was hard, tough, and dry as compared with the true kind, and never gave satisfaction. Each of the three was unmistakably Pomme Royale, but they differed widely in quality, which we could account for only on the theory that the stock does affect the fruit.—W. B. P., in "New York Tribune."

Grape Failures.—Please inform me if I have overcropped my Vines. I planted two-year-old canes early in the spring of 1871, and they made very good growth; but I did not let them fruit the first season in 1872. They made very good growth, and I allowed them to carry each about two or three branches. I pruned them on the spur system, and this year I thought they would each be able to carry from ten to thirteen bunches. They are now beginning to colour; but the berries are very small. Is overcropping the cause? —A SUBSCRIBER. [As your Vines grew well the first and second years, and carried little or no fruit, they should certainly have borne "from ten to thirteen bunches" this year—and finished them off well—unless the bunches are unusually large. You do not give the length of the bearing rods, and you have omitted to state what varieties you grow. We can only surmise that the berries are stoneless, or not thinned enough; or, that the Vines have received some check at their roots, through want of water or some similar cause. You had better examine the berries, and if the seeds are full-sized and hard, the evil must be at the roots. Had the crop been too heavy, it is more likely that the berries would not have coloured well, than that they would not have swelled to their full size. Examine the border.—J. S.]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Strawberries in Orchards.—It is the practice about San José, in California to grow Strawberries in orchards. The berries in this sunny climate are generally quite as fine in the orchard as on open ground. The only question seems to be as to how the trees are affected by such culture, and on this point there seems to be quite a diversity of opinion among gardeners.

Fruit Crops in Yorkshire.—In this district some common sorts of Apples are plentiful, but choice kinds are scarce. Of Apricots we have a sprinkling. Plums on some trees are good, Orleans and Victoria being the best; Pears on walls are thin, and we have none on espaliers and standards. Dessert Cherries are scarce, but Morellos are good both on walls and pyramids, especially on the latter; and small fruits of all sorts are abundant and fine, particularly Strawberries and Gooseberries. Patches in the garden here are excellent; we have them on three different walls, and in all cases we have fine crops; we thinned off enough for half a dozen crops, and the only protection which they received was that of herring nets two or three times doubled, yet the trees had plenty of green leaves on them at the end of last November.—H. C., *Grimston Park, Told-caster.*

THE GARDENS OF ENGLAND.

COMBE ABBEY.

SOME time ago we published an account of the gardens at Combe Abbey, and now follow it with a plan of the kitchen garden and its surroundings (see p. 149), and two other illustrations. The portion of the neatly-covered Peach-wall shown will bear evidence to more successful Peach-culture than we often see in the open air now-a-days. The mode of training of these Combe Abbey trees is neat and peculiar; but there is not much of importance in that. The training of all the branchlets above the main shoots is supposed to facilitate the upward and equable flow of the sap; but there is no evidence that it does so any better than when the branchlets spring from both sides of the branches. The cordons trained in a similar fashion in the long house at Chiswick are certainly no better in any way than hundreds we have seen trained herring-bone fashion. It is not to training, but to want of protection, we must look for an explanation of our failure with the Peach in the open air. One might as well expect to ripen Muscats on the bog of Allen as hope for the Peach to attain perfection with the treatment it often gets on walls. It is to the perfect exposure of these trees to every rapid change of weather, to our hardest frosts, and to blossom-destroying sleety rains, that freeze as soon as fallen, we must trace the miserable condition or the death of the trees. On the other hand, we have evidence here and elsewhere that, by properly protecting the wall in spring by a wide coping, or in any other simple manner, we may obtain as fine fruit as in any country in the world. It is to be regretted that the culture of such a noble fruit in the open air does not progress in consequence of leaving the trees so unmercifully exposed in spring—and in winter also; for it should be borne in mind that the Peach tree often perishes from cold long before either bud or blossom opens, and this in countries where it thrives as a standard tree—as, for example, this year in Michigan. With reference to the form here adopted, it is doubtful, very doubtful, if any form that takes a long time to establish is the right one for the Peach. Certainly we should prefer some simple erect-growing form, by means of which the wall could be covered in three, or at most in four years.

they serve to soften down the usual harsh artificial look of the houses in a very effective manner. We do not see enough of this happy embellishment of objectionable surfaces and positions. It may be laid down as a general principle that one may obtain ornamental plants wherewith to embellish every kind of earth-surface that exists. Every day one may see "rockeries" in which the steps, &c., look as harsh and bare as a new brick wall, yet in the angle formed by each step a little colony of the loveliest Violets and other Alpine flowers would grow joyously in the gravel. The very harsh earthen walls may be jewelled with the brilliant flowers. But, above

all places, every open surface in the greenhouse or stove, structures in which conditions favourable to plant-life so often exist in perfection, may be easily covered with plants. We hope, therefore, that this charming phase of wild gardening so well shown at Combe, as regards Ferns, will become popular, and that we may see a little less of the harsh red pot and a little more of free nature's grace in our hothouses and other places in our gardens than we have hitherto done. Having before referred to the excellent systems of cultivation which our choicest fruits receive here, we must not go

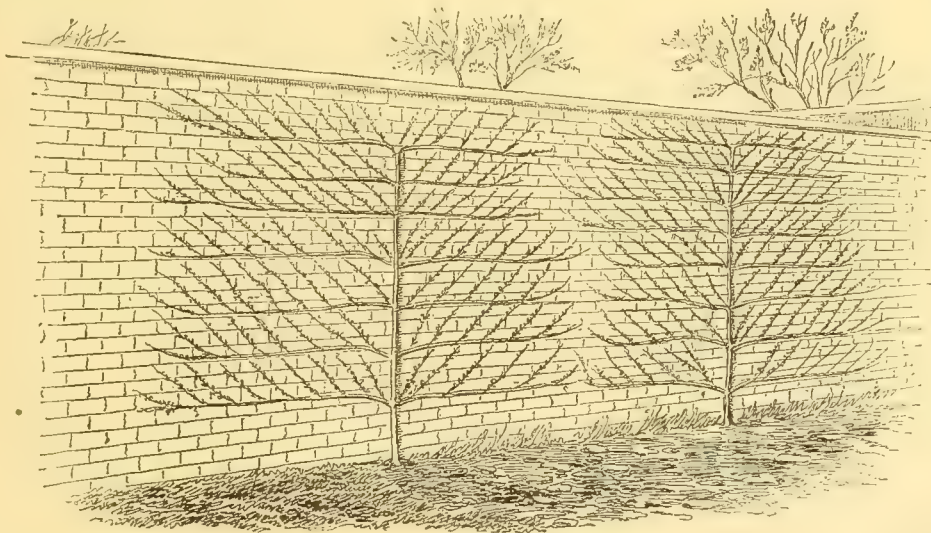
over the same ground again; but may remark, in passing, that fine as is the arrangement of the kitchen and fruit gardens, hothouses, &c., the placing of the whole in the midst of the pleasure-grounds, and so near the mansion, was a radical mistake in design.

Growing Mushrooms on open Lawns.—In dry positions, and in loamy soils, Mushrooms may be grown with advantage in open situations on lawns. The spawn should be inserted as follows:—Take a sharp spade, force it into the ground 2 or 3 inches, and withdraw it without disturbing the grass; then place it at one end of, and at right angles with the first incision, and force it into the soil in a similar manner, bending the handle backwards until an opening is made sufficiently large to admit a piece of spawn of about an inch square. When this is inserted, the spade should be withdrawn, the turf

allowed to fall in its place, and firmly trodden down with the foot; the latter is an important part of the operation. The months of July and August are suitable for performing this operation. The pieces of spawn may be inserted, say at a yard apart. In soils and situations which are naturally wet, this plan would not be successful. When the spawn is found abundantly in an old Mushroom-bed, or runs freely through an old heap of stable manure, is the time to secure it for this purpose, or it may be bought in the usual way in the brick form and broken into suitable-sized pieces, as mentioned above.—E. H.



Ferns along passages in greenhouses at Combe Abbey.



Portion of the Peach wall at Combe Abbey.

The small illustration showing the way in which Ferns are grown beneath the benches and along the passages in the gardens at Combe Abbey deserves notice. It is a very simple mode of growing many species of Fern useful for cutting, and

LONDON MARKET GARDENING.

TOMATOES.

THE large red-fruited sort is the only kind cultivated in market gardens, and I do not think that growers for market will be easily persuaded to exchange it for any of the so-called novelties that have lately appeared among Tomatoes. No! Market gardeners only grow what they are pretty sure will prove remunerative. Early in spring the seeds of the large red kind are sown broadcast in a frame, set on 18 inches in depth of fermenting manure, over which 6 inches in depth of light soil has been placed. In severe weather the frames are protected at night by means of a covering of litter placed over the sashes, but this is removed in the morning when a little air is given. It is advisable to have the young plants as strong, healthy, and stubby as possible; and, in order to secure this, a gentle bottom-heat and plenty of ventilation are necessary. Soon after germination they are thinned a little, and, when they are about $1\frac{1}{2}$ or 2 inches high, they are pricked out into 4 or 6-inch pots, two plants being generally put into each pot. Frames are sometimes prepared for these as follows: First a foot in depth of fermenting manure is put together in the form of a bed, on which is placed 8 inches in depth of soil, and in such beds pots filled with mould are plunged up to the brim. The plants are then dibbled into the pots, and the frames shut up and kept close for a time, until fresh root-action has taken place. They are afterwards kept freely ventilated until May, when the sashes are entirely removed during the day, and only replaced and lifted up at night or in wet weather. By planting time, which is the last week in May and first fortnight in June, the plants are thoroughly hardened off, although still unable to endure even a slight frost.

In market gardens, Tomatoes are seldom planted against walls, as is done in private establishments; a warm situation convenient to water is, however, selected for them, and in such positions they produce abundance of fine large well-coloured fruit. The earliest planted ones are generally put in the most favoured positions, such as a warm border, or on either side of "spent" Mushroom ridges where they are well sheltered. If planted too early they are liable to be cut down by late frosts, in which case entire removal and replanting is the safest remedy, but if the damage be not too great the sound eyes will produce shoots, that will carry heavy crops. The second or main planting is made on a more open, yet warm quarter, in rows about 3 feet apart, and the plants are set the same distance asunder in the rows; indeed 3 feet is a universally recognised distance at which Tomato plants should stand apart. In some cases a trench is thrown out 18 inches deep and 3 feet wide, and a foot in depth of fermenting litter is packed into it and covered with soil. On these trenches, which are 3 feet asunder, are planted two rows of Tomatoes only 18 inches apart, but the plants in them stand at the usual distance apart and alternate one with the other in the different rows. After planting, if frost is apprehended, an inverted pot is placed over each plant at night until all danger is over. A mulching of decayed manure is generally put over their roots, and as they advance in growth little earth basins are drawn up to them with the hoe for the retention of water which is given to them liberally. Stakes four feet long are inserted beside the plants, and to these they are tied with matting as growth advances, taking care to keep the shoots on the sunny side of the stakes. To such as were planted against Mushroom ridges, stakes are, of course, unnecessary, as the shoots are pegged to the ridges, on which they thrive well. One of the most important points in Tomato growing is timely stopping of the laterals; indeed, on this alone the amount of produce greatly depends. Some growers retain only one rod to each plant, others two, and a few three, but none exceed that number. Every other lateral is pinched or rubbed off as soon as it appears, and when three good clusters of fruit on each plant have set, the point of the shoot or shoots is nipped out, so as to induce increased bulk in the fruit. If the amount of foliage be too great it is reduced by removing some leaves wholly and by cutting off the half of a few more, but sufficient must be retained to enable the plants to perform their proper functions, and to shade the fruit whilst they are swelling. As soon as the fruit has attained its full size

the leaves may be turned aside so as to expose it to the sun, by which means it ripens more readily and is of a better colour than when shaded. The ripe fruits are generally picked off twice a week, leaving the greener ones a little longer so as to mature themselves, but should frost come, all fruits are picked off and spread out on hay, in a frame under sashes where they eventually become red.

The amount of fruit borne by a patch of Tomatoes in a well-managed market garden is really wonderful. I have seen in the vicinity of London this crop in some private gardens and under good circumstances, provided they had been taken advantage of, in very bad condition; while in market gardens close at hand the same crop was in a most flourishing, healthy, and fruit-bearing state, simply because the latter had received unremitting attention in the way of pinching off laterals and leaves, timely stopping of the leading shoots, judicious cropping in the way of bulk and quantity of fruit, and plenty of nourishment by means of frequent supplies of pure water and occasional applications of manure-water when convenient, to which were added mulchings, and frequent hoeing of the ground. Tomatoes may follow the winter and spring frame ground, and be off the ground in time to make room for the same the succeeding winter. If in any other position, the ground, after the crop has been removed, may be manured, trenched, and ridged, a preparation which will admirably suit early Cauliflowers.

W. F.

USES OF TOMATOES.

NOWHERE are Tomatoes more largely used than in America, where they are universally popular, both raw and cooked; but greater quantities are probably eaten raw than in any other way, and the manner of dressing them varies greatly. Some persons use only vinegar and salt; others vinegar, salt, and oil; while others prefer sugar and cream, as for Strawberries. We prefer them with a salad dressing, prepared with raw eggs, mustard, oil and vinegar, salt and pepper, or with a mayonnaise dressing, such as is used for lobster and chicken salad. Tomatoes should always have their skins removed by pouring boiling water over them, and, after being cut in thin slices, should be placed upon ice to make them crispy cold. If eaten in a tepid state, their fresh flavour is much injured. The salad dressing should also be served in a separate dish, and served as pudding sauce or gravy. Tomatoes, to be eaten raw, should always be of the finest quality, as their superiority is more readily discerned than when cooked. It is difficult to spoil Tomatoes, even if badly cooked, provided that bad butter is not added to them; but one can change the modes of cooking them so as to provide a pleasing variety. The following American modes of cooking them may be useful:—

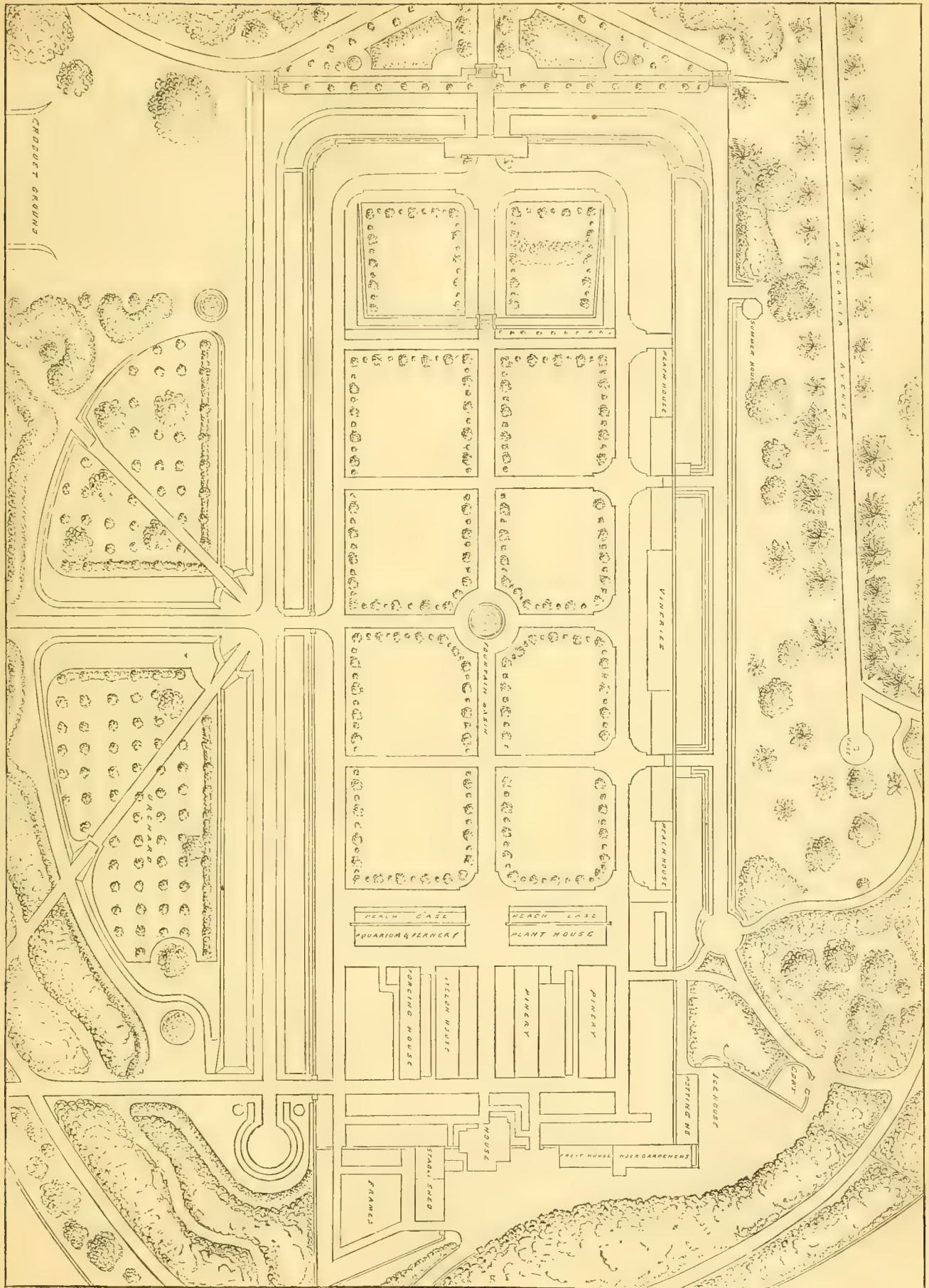
STEWED TOMATOES.—Select very ripe Tomatoes, skin and slice them, rejecting the hard parts. Put them in a porcelain saucepan, with a little salt and pepper, and simmer for one hour and a half. Add a piece of butter, or two teaspoonfuls of beef, mutton, veal, or chicken gravy. Toast a slice of bread, cut it into inch bits, and put it in the dish in which the Tomato will be served, turning the contents of the saucepan over it.

Another Way.—Take one dozen good-sized Tomatoes, skin and slice them; put them in a saucepan and boil for one hour; season with pepper and salt, then strain through a sieve, put back into the pan and add two well beaten eggs. Stir rapidly for five minutes, then turn out and serve. This is very delicious as an accompaniment to roast beef or mutton.

BAKED TOMATOES.—Select thoroughly ripened fruit, cut them in halves; sprinkle over the cut half with bread crumbs, sugar, salt, pepper, and butter. Place them in a baking pan cut side upwards, and bake in an oven for two hours. Serve on a platter, garnished with curled Parsley.

BAKED STUFFED TOMATOES.—Select very large-sized Trophy Tomatoes, and cut out a space at the stem end, taking care not to break the outer skin, fill up this cavity with a stuffing of bread rubbed through a colander, butter, salt, pepper, and a little sugar; put back the stem end, which should have been cut out in a circular form, carefully, so that it will fit in closely; place the Tomatoes in a baking pan and bake for one hour. If well managed they can be made to retain their shape.

TO BROIL TOMATOES.—Broiled Tomatoes make a delicious



PLAN OF THE KITCHEN AND FRUIT GARDENS, &c., AT CONBE ABBEY. (See p. 147.)

lish; select those that are not over-ripe, and cut them in halves crosswise; dip the cut side into beaten egg and then into wheat flour, and place them upon a gridiron, whose bars have been greased previously. When they have become well browned, turn them over, and cook the skin side until thoroughly done. Then put butter, salt, and pepper upon the egg side, and serve upon a platter.

TOMATO SOUP WITHOUT MEAT.—Take one dozen good sized, very ripe Tomatoes, skin and chop fine; put into a soup kettle, boil for ten or fifteen minutes, add a bit of saleratus as large as a Pea, stir till it stops foaming; turn in one pint of fresh sweet milk and three Boston crackers rolled fine; season with salt and pepper and a good piece of butter; boil for fifteen minutes.

THE LIBRARY.

FRENCH HOME LIFE.*

This is a very remarkable book, showing, on the author's part, accurate observation, and much power of expressing it. It consists of a series of essays on the Servants, Children, Furniture, Food, Manners, Language, Dress, and Marriages of the French. These will show to most Englishmen who read them a new and, as we think, in the main a true view of French life, and one which cannot fail to be of use in other ways than in the weakening of national prejudice and vanity. Our notions as to the life of the French are generally absurdly wrong, and it was a happy thought of the author to endeavour to dispel them. Look, for example, at the common English notion that the French live for the most part in restaurants. So untrue is this, that we have known Frenchmen who never in the course of their lives dined in a restaurant, except when forced to do so in travelling! Then, again, there is the common notion that the French live on kick-shaws and numerous messes so prepared as to be unrecognisable. The opposite is the fact: at a private French table, food of all kinds is generally served in the simplest manner, and hashes and messes are not seen. Of subjects that directly concern *THE GARDEN*, there is little said, but there is a curious statement in the essay on food as to the use made of the despised Garlic in the south of France. Over this, the author grows enthusiastic and even mysterious. Preparations vivified with this root are, it appears, prepared with unrivalled success by the brothers Roubion, in the *Réserve*, at Marseilles. "There is but one word in English which describes the sensation of the traveller who eats there for the first time—that word is revelation. New truths seem to be imparted to you as you swallow, new objects and new theories of life seem to float around you. Strange ideas come to you across the sea; and when it is all over, when, with a calm-bringing cigar, your legs stretched out, you silently digest and think, with the Chateau d'If and the flickering waves before you in the moonlight, you gratefully thank Providence for having led you there. All this is the effect of Garlic, which acts upon you like haschisch. . . . The white fish on Lake Superior, the prawns that get fat on the dead negroes who are buried in the sea at Rio Janeiro, the canvas-backs in October at Baltimore are all sweet to eat and to recollect, but they are pale, indeed, by the side of Ailloli" (Garlic). The following extract on the use of herbs and *tisanes* is also interesting:—

The wise employment of herbs and of *tisanes* is universal. It belongs to no province and to no department in particular; it is everywhere throughout the land. No salad is complete without its *furniture*, which consists of Chervil, Pimpernel, Tarragon, and Chives—all daintily chopped up, so that their subtle perfumes shall pervade the leaves of Romaine or of Lettuce. Scarcely a sauce is possible without its "bouquet," which results from the distillation in it of a little bunch of Parsley, Thyme, and Laurel. The water in which fish is boiled is prepared beforehand by decocting the same herbs in it. As for *tisanes*, their name is legion; and though they are, for the most part, rather medicinal than nutritive, they occupy a sufficiently important place in the economy of French home life to merit mention here. The first and most notable of them is *tilleul*, made of the dried flowers and young leaves of Lime trees; then come Marsh Mallow, Violets, Apple, Cherry stalks, Orange flowers, Tuciage, Camomile, Ash leaves, Arnica, Mélisse, Verbena, Fenuel,

* "French Home Life." W. Blackwood & Sons.

Erysimum, Valerian, white Stinging Nettle, Ivy, Absinthe, Hop blossom, and twenty others. Each substance possesses a special merit of its own, and produces a particular effect. Some are stimulating, some are soothing, some aid digestion, others bring about the most odd results by their action on our organs, one or two induce sweet sleep and abundant perspiration. In every house in France a stock is kept of these various ingredients, ready dried. When wanted, a little handful is thrown into a teapot, boiling water is poured over it, and in three minutes the gentle remedy is prepared. It is almost pleasant to be ill in France, in order to make acquaintance with such agreeable physic. The variety of substances in common use is so considerable, that it implies an extent of knowledge of herbs and simples beyond what we have any idea of here. This knowledge is insensibly acquired in early childhood from constant contact and from constant use. Every French girl of ten years old knows what is the right *tisane* to administer in a given case; she gives it to her dolls for practice.

As regards the consumption of vegetables in France and England, we learn that each inhabitant of Paris consumes, on an average, 300 lbs. of vegetables every year, while a Londoner only consumes 141 lbs. in the same period. This fact may have something to do with the freedom from stomach diseases which the French certainly enjoy, as compared with the English at home or abroad. It only remains for us to recommend "French Home Life" to all interested in the subject.

ADVANCED TEXT-BOOK OF PHYSICAL GEOGRAPHY.*

This excellent compendium of the numerous facts relating to the very extensive subject of which it treats has been as carefully compiled as the author's well-known "Text-Book of Geology," to which it forms an admirable companion volume. From the chapter on the "Distribution of Life" we extract the following:—

Admitting, however, in the fullest degree, the influence of heat, light, moisture, and the like, in the distribution of vegetable life, there still lies over and above them a primal arrangement, by which certain forms are naturally restricted to certain areas. This arrangement, which is seemingly not dependent on climate (for the plants thrive equally well when transferred to other areas), imparts a certain physiognomy to these regions; and thus botanists, entering more minutely into the geographical aspects of their science, subdivide the earth into regions and provinces according to their prevalent floras. Such subdivisions lie beyond the limits of our outline, but the learner will readily perceive their bearings when he considers—first, that some forms, like the Tea-plant and Camellia, are peculiar to eastern Asia; some, like the Eucalypti and Casuarinas, to Australia; others, like the Magnolia, to the southern latitudes of North America, and so on: while, second, that every tribe of plants has a special aspect or physiognomy, and where such tribes prevail, that physiognomy will be imparted to the landscape. Wherever, therefore, certain orders are peculiar, and a certain number of genera and species prevail, this constitutes a botanical "region," such as the region of Saxifrages and Mosses, the region of Magnolias, the region of Camellias and Teas, region of Palms, and so on—making in all some twenty-four regions, into which the earth's surface has been botanically divided. In like manner with aspect or "physiognomy," as the Palm form, the Banana form, the Mimosa form, Cactus form, Heath form, Grassy form, Willow form, &c.—there being in all twenty-two such forms, which are readily distinguished even by the eye of the botanical observer.

WORKSHOP APPLIANCES.†

This work, which is one of Messrs. Longman's valuable series of "Text-books of Science," contains an interesting and exact description of the various tools employed in the working of wood and metals. It explains very clearly the principles on which the different implements are constructed, and supplies much valuable information as to their use and proper keeping. The text is illustrated by 209 first-class engravings. Any man who has the use of his hands, and wishes to understand how to make the most of the power potential of any tool employed either in iron or wood-work, will find these 307 pages of well-digested information all he can desire.

* "Advanced Text-Book of Physical Geography." By David Page, LL.D., F.G.S. Second and Enlarged Edition. Edinburgh and London: William Blackwood and Sons. 1873.

† "Workshop Appliances, including Descriptions of the Gauging and Measuring Instruments, the Hand-cutting Tools, Lathes, Drilling, Planing, and other Machine Tools used by Engineers." By C. P. B. Shelley, Civil Engineer, Honorary Fellow and Professor of Manufacturing Art and Machinery in King's College, London. Longmans, Green, & Co. 1873.

THE INDOOR GARDEN.

UROPEDIUM LINDENII.

This singular-looking terrestrial Orchid was found by M. Linden in shady woods in New Granada, at an elevation of between 8,000 and 9,000 feet, and where the annual mean temperature is only a little over 56°. It was introduced into this country nearly 30 years ago, but has never been cultivated very successfully, having, in many cases, been killed by subjecting it to too much heat. It is easily grown, however, if placed in fibrous peat and loam, in well-drained pots. A layer of fresh Spbagnum should be encouraged to grow on the surface of the compost, and, if plentifully supplied with moisture, in a cool humid atmosphere, this by no means uninteresting Orchid will grow vigorously, and perfect its curious flowers. In general habit the plant can scarcely be distinguished from the Peruvian Long-tailed Lady's Slipper (*C. caudatum*), of which some consider it to be only a monstrous form. In their inflorescence the two plants closely resemble



Linden's Uropedium.

each other, except that the Uropedium has no swollen pouch-like lip, but in its place a petaloid appendage as long as the petals themselves, and similar in shape and colour. It first flowered in Europe about 1853, with M. Pescatore, at St. Cloud. Its blooms, which are produced in March or April, last a fortnight or three weeks in beauty. F. W. B.

DRACÆNA AND CORDYLIN.

By MR. G. J. BAKER. (Read before the Royal Horticultural Society.)

THERE are two genera of arborescent Liliacæ which since the beginning of the century have been distinguished by botanists by universal consent, and which are well marked from one another both by structural differences and by habit, which seem lately, so far as nomenclature goes, to have drifted into a state of fusion in our collection and trade catalogues in a way that certainly would

be protested against if Lilies were either Ferns or Orchids. The two genera to which I refer are *Dracæna* and *Cordylina*, some members of which everyone knows, and everyone who has a conservatory cultivates. The Dragon tree of the Canaries is a plant about which everyone has read, and the great Dragon tree of Orotava, with a trunk 70 feet high and 50 feet in circumference, which has an authenticated history going back to the commencement of the fifteenth century, is a prominent item in every bead-roll of vegetable wonders. Scarcely less celebrated, though of course not known so long in Europe, is the invaluable "Ti" tree of the Polynesian islanders, *Cordylina terminalis*. Its uses are almost as manifold as those of a Palm. In the Sandwich, Society, and Fiji groups it serves largely for food. The tuberous root, which often weighs from 10 to 14 lbs., after being baked on heated stones, is said to closely resemble stick-liquorice in taste and sweetness. Bruised, mixed with water, and fermented, it forms an intoxicating drink; distilled, an ardent spirit is readily obtained; boiled before fermentation, a rich syrup capable of being used as sugar is the result. The leaves furnish excellent fodder and are used for this purpose by European settlers. It is often grown for the sake of its ornamental leaves; and the stems stuck into the ground in a row, soon run up into a firm fence for an enclosure. These are the two best and oldest known members of the two genera. Now as to their botanical distinctions. The structural difference between them is as follows:—In *Dracæna* there is only a single ovule in each of the three cells of the ovary; in *Cordylina* there are a great many—eight to fourteen, say the books. Of course in both there is a tendency for the ovules to become abortive without ripening into seeds; but so far as my experience of the Ti trees goes, there are never less than two or three seeds in a cell, whilst in the Dragon trees there cannot be more than one, and frequently one or two out of the three cells become obliterated, as is the rule in the Oak or Horse Chestnut. In *Dracæna* the stigma exists in the form of a head like the button of a fencing-foil, with three little blunt lobes, as in the Lilies. In *Cordylina* it takes the form of three small hooks like the top of a shepherd's crook or the handle of a walking-stick, as in the Fritillaries. So much for differences in the actual structure of the flower; next for habit. In *Cordylina* the flowers are placed singly on the rachis of the panicle each surrounded by a regular little involucre, formed of the membranous bract that subtends the pedicel on the side farthest from the axis, and inside the pedicel a pair of bracteoles, just like the bract in size and substance, which are sometimes quite distinct from one another, and sometimes united along their borders. In *Dracæna* the pedicels spring out of the rachis in bundles of two or three, or in some species of many together, without any such regular arrangement of bracts and bracteoles as I have just described. The pedicels in *Dracæna* are usually longer than in *Cordylina*, and the perianth is united through a greater portion of its length, but this does not hold good invariably, and in the shape of the leaves there is very much the same range of variation in both. Dr. Regel adds that *Dracæna* may be distinguished also by its orange-coloured roots and by the absence of runners, but these latter are present in the African *D. surculosa*. The number of ovules and seeds, the shape of the stigmas, and the arrangement of the pedicels and bracts are the points on which it is safe to rely, and the two genera were separated by Jussieu when he laid the foundations of the Natural System in 1789, and have been adopted by Robert Brown, Endlicher, Meisner, Kunth, Dr. Hooker, and all other writers who have had occasion to deal with them.

The geographical distribution of the two genera is not dissimilar. They are, both spread through Tropical Asia and North Australia, and are both entirely absent from Europe and America; but whilst there are several species of *Dracæna* in Tropical Africa there are no *Cordylines*, and the latter, on the contrary, stretches into New Zealand and Polynesia, where *Dracæna* does not reach. An excellent monograph of all the known species of *Dracæna* has lately been published by Dr. Regel in the *Gartenflora*, and there is an account by Dr. Hooker of the New Zealand and Australian *Cordylines* in the volume of the *Gardener's Chronicle* for 1860, and the two later descriptive lists of all the known species and forms have been published by Dr. Karl Koch in the Berlin *Wochenschrift*.

I will conclude with a list of forms of *Cordylina* which, within the last few years, have been placed in circulation in horticulture as species of *Dracæna*. None of them, so far as I know, have been botanically described, and we shall probably not be far wrong in assuming that most of the names in the following list represent mere forms of *Cordylina terminalis*, varying in the shape, size, and colouring of the leaf. I need scarcely point out that the distribution of slight varieties of an old well-known plant under new specific names, appended to a genus to which they do not belong, has a great tendency to cause confusion in the minds both of gardeners and botanists; and I hope that in this particular case the

Horticultural Society will, for the future, guard against the continuance of the practice: —*Dracana albicans*, *D. amabilis*, *D. angusta*, *D. Chelsoni*, *D. Cooperi*, *D. concinna*, *D. Dennisonii*, *D. gracilis*, *D. grandis*, *D. Guilfoylei*, *D. limbata*, *D. longifolia*, *D. Macleayi*, *D. Mooreana*, *D. nigrescens*, *D. nigrorubra*, *D. magnifica*, *D. pendula*, *D. pulchella*, *D. Wisemanni*.

THE IMMORTELE PLANT.

IN France, an affectionate remembrance of the dead is manifested by periodical votive floral offerings, which relatives and friends suspend over the last resting places of those who were dear to them in life. As emblems expressive of that higher existence which, perhaps in their inmost hearts, most men desire to lead, even on this "sin-worn mould," flowers, in their lovely and innocent lives, are the most appropriate objects which the whole range of nature can present. But even here, amid the highest and purest forms of beauty vouchsafed to human perception, occurs the humbling sense of instability and fugaciousness attached to all sub-lunary things. In the expression of that devotion which attributes to the memory of the departed excellencies lightly, or it may be hardly at all, recognised amid an induced apathy and "dreary intercourse of daily life," the mind, purified by loss and by the reflection that all other atonement now is late, would not only present the most beautiful offering that earth can afford, but endeavour to make the token as lasting as possible. And so the flowers of the Immortelle or Everlasting offer themselves among the thousands of other flowers, many more beautiful, but none so fitted to grace the long repose of the tomb.

This plant, known to botanists under the name of *Helichrysum orientale*, was originally a native of the north of Africa, the island of Crete, and some parts of Asia. Although known in Europe since 1629, it was not generally cultivated in gardens before the year 1815. At present it is chiefly grown in Lower Provence, in the south of France, where the land gradually inclines to the shores of the Mediterranean. It comes to greatest perfection on the slopes of Bandols and Ciotat, in positions well exposed to the sun and surrounded with dry stone walls, where it commences to bloom in June. It is seriously injured by much rain, and to some extent even by heavy dews. It does not thrive in any soil that is not light, sandy or stony, and porous. It is propagated by division of the larger tufts. The flowering-stems are gathered in June, before the flowers are fully expanded. As both immature flowers and those which are too full-blown are rejected in the market, it is important that the stems should be cut neither too soon nor too late. The flowers are gathered by women, who make them up into small bundles, which are usually placed to dry on the stone walls of the enclosure in which they grew. When properly dried they are taken away by young girls, who are employed to remove the downy covering from the stems and flower-stalks. A pound weight of the dried plants contains about 200 stems, each bearing on an average twenty flowers. Each tuft of the growing plants produces from sixty to seventy stems. An acre of ground will contain about 16,000 tufts, which will annually yield from 2 to 3 tons weight of dried Immortelles, and a well-established and well-managed plantation will continue productive for eight or ten years. The flowers are sold either by the bundle or by weight, the bundles ranging from 1½ to 3d. each, according to size; while, if sold by weight, the price varies from 12s. to 18s. per cwt., according to the state of the market, &c. The flowers reach Paris packed in boxes, each containing 100 bundles. The bundles are all placed in the boxes with the flowers directed outwards, or against the sides or ends of the box, while the stems lie towards the centre. By this arrangement the heads or clusters of flowers escape the risk of being crushed out of shape. The natural colour of the flowers is a deep yellow, but the manufacturers of garlands, bouquets, &c., dye large quantities of them in other colours also, chiefly black, green, and orange-red (*rouge ponceau*). This last-named colour is a very handsome one, and is the favourite tint of the people of the south of Europe. It is said to be obtained from a preparation of borax. The natural yellow flowers, and those which are dyed black, are used together to form the garlands devoted to the dead, while those which are dyed green or orange-red are associated with the natural flowers in making bouquets or "button-holes." In these, however, the "Immortelle" takes no very prominent place among other flowers. Its great distinction from them consists in its possession of those peculiarities of structure which have induced a nation of sentiment and refined taste to select it as the most fitting of all to fill the office and bear the title of "The Flower of the Grave." This plant, sometimes seen in "old-fashioned" garden borders, is quite hardy and easy of culture on well-drained light loamy soils, and on light soils generally. W. M.

THE ARBORETUM.

DERIVATION OF THE NAME HORSE CHESTNUT.

THE conjecture of your correspondent, Mr. Palmer (see p. 123), that this name refers to the cicatrix left by the fallen petiole resembling the impression of a horse's shoe, with the heads of the nails, proves once again how often different observers hit upon the same idea. I have been accustomed to point out this curious similitude to my pupils and acquaintances for thirty years at least, and it is offered, as the solution of the name, in "Notes and Queries," Third Series, Vol. X., p. 45. Notwithstanding this, I am satisfied that the name of the tree and the resemblance in question is a simple matter of coincidence, and that the name is intended to denote coarseness and unfitness for food; as, with more or less of an exact parallel in the case of Horse Radish, Horse Mint, Horse Mushroom, Horse Gowans (in Scotland the name of the Ox-eye Daisy), and probably others. Compare, also, horse leech, horse play, and a horse laugh. LEO GRINDON.

As Mr. Palmer does not give any authority for his ingenious etymology of the name Horse Chestnut, I fear that it cannot be accepted as the true one. "Horse" prefixed to a noun frequently signifies large, rough, or coarse. Thus Horse Radish, a large coarse Radish (of course in appearance only); horse play, rough play; horse laugh, a rough, rude laugh; horse marten, a large kind of bee (see "Johnson's Dictionary"); so the Horse Chestnut is so named (at least this seems most probable) because the fruit is larger, coarser, and altogether inferior to the Sweet or true Chestnut. The scientific name, *Æsculus Hippocastanum*, is, of course, no guide to the etymology of the English name; at best it is but a mongrel, the generic name being Latin, the specific being a Greek translation of the English name. I have never tried horses with the fruits of the Horse Chestnut, but sheep are particularly fond of them, and eat them greedily under the trees in autumn. I hope Mr. Palmer will pardon my objections to his derivation of the word. Analogy, in this case—in the absence of direct proof—is a safer guide than guesses.

SALMONICERS.

THE ALPINE FORESTS OF EUROPE.

ON quitting the lower slopes of the mountains the traveller, in his ascent, leaves behind him the great majority of the deciduous kinds of trees, and enters into the region of the Pines. These, in many places, form immense forests stretching up the mountain sides to an altitude of 7,000 or 8,000 feet above sea-level. One of the commonest kinds in nearly every part of the Alps is the Spruce Fir (*Abies*), which grows sometimes mingled with the Larch, but more frequently alternating with it. It is seen in its greatest beauty on the limestone zone, which extends along the northern side of the Alps from Savoy to the Tyrol.

The Larch has a higher range than the Spruce. It grows freely up to about 6,000 feet of altitude, and in some localities, such as the Engadine, as far as 6,700 feet. Speaking generally, the zone of Larch forests extends from 4,000 to 7,000 feet. Magnificent specimens of this tree are often met with in the woods, rising to a height of from 100 to 120 feet, with a diameter, measured about a yard from the ground, of 4 or 5 feet. The Silver Fir (*Abies Picea*) is more sparingly distributed than either of the foregoing. It is common, however, in the Jura, and in parts of the Engadine and Southern Tyrol, but very rare in the districts of the Western Alps. In the Jura it reaches an altitude of 5,000 feet on the Dôle, but in the Engadine it has a lower range. On the Pennine chain it has been found up to about 6,200 feet. Similarly limited in its distribution, but occasionally very abundant, is the Scotch Fir (*Pinus sylvestris*), which grows up to about 6,000 feet. It is rare in the French, Piedmontese, and Swiss Alps, where it seems to be generally confined to the alluvial land. It is, however, occasionally found in the mountains, but does not generally form extensive forests. In the Southern Tyrol it is more abundant, and extends to a considerable height above the sea, perhaps not less than 5,000 feet. The last of the Alpine forest

Pines is the Swiss Pine (*Pinus Cembra*), one of the most beautiful of all, with its glossy, dark green, dense clusters of foliage. Though in many districts very abundant, this is decidedly a local tree. It is chiefly found on the Frela above Livino, on the north side of the Munster Thal, and in the neighbourhood of the Bernina and on the Stelvio, where it grows as far up as 8,000 feet above the sea. A well-grown

Pine is very common. Its mode of growth is peculiar; for a considerable distance it trails along the ground, then it rises in a bold sweeping curve, throwing out branches which all point sharply upwards, till their extremities are nearly vertical. The long snake-like trailing trunk is of a reddish-brown colour, and varies in length from 10 to 30 feet; near the root it is often 4 or 5 inches thick. The smooth round stems are



Scene in a Pine forest on the Alps.

specimen of this tree is from 50 to 80 feet high, the circumference of the trunk a little above the ground being a dozen feet or so. In the Grodner Thal the wood is extensively used in the manufacture of toys and carved ornaments. In a full account of Alpine forest Pines, the dwarf Pine (*Pinus Pumilio*) must not be omitted, although, properly speaking, its place is among the brush-wood, as it forms a scrub generally only about 6 feet high. In the Engadine and Eastern Alps this

very slippery, and when trodden on are apt to bring the incautious walker into a sitting posture with remarkable celerity.

The Ban-forests (*Banuwalde*) of the Alps are strictly protected by law, no one being allowed to cut timber in them under heavy penalties. The object of preserving these forests is thus described by M. H. Berlepsch in his work on "The Alps:"—"Every mountain village has ban-forests, if it is shut

in by steep valley walls, and therefore exposed to avalanches, falls of stones, or land-slips. These ban-forests are kept up from motives of prudence. The office of the ban-forest is to hinder, by its mass of strong upright stems, the breaking loose and sliding down of the vast heaps of snow that accumulate in the winter, and thus to prevent the formation of 'ground avalanches,' not, as is commonly supposed, to hold up the avalanches already started, like a dam. The inhabitants of the Alps saw this necessity centuries ago, and therefore spared particular forests, placing them under the 'ban,' i.e., declaring it unlawful to touch them."

Our illustration represents a scene in a Pine forest at a considerable elevation, where, on an exposed crest of the sloping mountain side, some wild hurricane has torn its way through the tall Spruces, levelling some to the ground and searing and maiming many of the survivors.

M'NAB'S TRANSPLANTING MACHINE.

THE merit of this machine is, that a shrub or tree, weighing from eighteen cwt. to thirty cwt., after being prepared, can be raised, conveyed, and planted without being subjected to any undue stress or even the possibility of injury. A small machine of this kind weighs about 5½ cwt., and is constructed of a strong frame of wood and iron, supported on wheels, with two windlass rollers in front, and two at the back, the back rollers being so arranged that they may be taken off, to enable the machine completely to enclose the plant to be operated on. To show how this method of transplanting is performed, and to follow it throughout all the stages, we shall take, for example, a shrub eighteen feet in height, and the branches sixteen or eighteen feet in circumference. The first operation is to tie in all the branches, with a piece of soft rope or yarn, to keep them as close as possible, and thus prevent them interfering with the works while in progress. It is necessary, before tying up, to attach a mark on the best side of the shrub, or what is intended to be the front after planting; by so doing, it will save a good deal of trouble after the plant has been lowered into the pit prepared for its reception. The machine is capable of taking in a ball of earth with roots four feet long, three feet four inches wide, and three or more feet deep. In every case it is necessary to be careful not to exceed this width, making allowance for the thickness of the canvas and staves to be employed round the roots. The opening up of the soil round the plant must now be commenced, beginning, of course, at such a distance as to secure all the roots which protrude beyond the line of the intended ball. The soil ought to be removed from the roots with a three or four pronged fork, taking care to keep the ball of earth and roots all round as perpendicular as possible, and where the balls will admit of being made circular it is better to be so. In the case of very large plants, an oval-shaped ball is just as easily managed as a round one, the machine being sufficiently strong for the extra size. Supposing the ball to be at its proper depth, and properly rounded and upright, such roots as will not bend may be cut off close to the earth. Surround the ball with a piece of canvas three feet broad, bending the roots carefully beneath it, taking the precaution of having the doubled portion of the canvas anywhere but at the sides. After the canvas has been placed round the ball, take a doubled piece of soft rope or yarn and surround the canvas within eight inches of the bottom, then bring the loose ends through the centre loop, bring the ends up the side, and surround the ball again about eight or ten inches from the top. Between the soft rope and the canvas, introduce a number of barrel staves of a uniform length and breadth, about half an inch in thickness, place them within five or six inches of each other, according to the firm or loose nature of the soil composing the ball, taking care not to put any on the extreme sides, that the canvas alone may touch the machine. The object of the soft rope or yarn is to keep the staves in their place till the rack rope is put on. With this rope surround the lower part of the staves, doubling the end several times round the main portion of itself, say about two feet or so in length; bring the main portion of the rope up the side of the ball, and surround the top again with it, doubling the end round itself as before. Both the upper and under portion of this rope must now be tightened firmly with a stout pin, placing them at opposite ends and perpendicular, so as to come within the corners of the machine. It is necessary to attend minutely to these observations, they being essentially necessary in order to prevent them interfering with the frame of the machine while the lifting is going on. The front of the plant being previously decided on, being the side where the machine can with the greatest ease be introduced with reference to the adjoining walks or roads. This concluded, fix a piece of wood between the ball and the edge of the hole, in order to

prevent the plant getting off the perpendicular while working beneath it, which is usually done with a long trowel.

After the undermining has been carried nearly half-way through, the lifting boards, four in number, made of strong oak and curved in the middle, with a grooved recess on the under side at each end, within three inches of the points for receiving and keeping the lifting ropes in their proper places, are introduced. If the ball to be raised be compact and firm, two oak lifting-boards may be put in, but if the ball is inclined to be soft, it is necessary first to introduce a piece of deal the same length as the ordinary lifting boards in case it has to be left under the plant, as the removal of it in some instances is apt to injure the ball; next place side by side one of the ordinary lifting oak boards. The lifting-ropes, made expressly for the machine, are now put under the ends of the lifting-boards, one on each side, the centre or middle of each rope being placed exactly in the centre of the ball, taking care that the rope is directly under the grooves of the lifting-boards, particularly the outside one; this done, fix in some soil to keep the bottom boards and the ropes securely in their place. Before commencing the undermining of the back part of the ball, secure it also to the bank with a piece of wood, and then commence the undermining. When finished place two bottom boards as before mentioned, taking care that they are exactly parallel with the two previously put under, and that the ends of each are alike straight. The opposite half of the lifting ropes must next be put under the grooves of these boards, one at each end, and secured with earth all round. The supports between the ball and the sides of the hole may also be withdrawn, as the plant ought now to stand by itself. The next operation is to lay two strong planks, one on each side of the plant. They must be laid perfectly level, and parallel with each other, keeping them as low as the ground will admit of. The machine being at hand, remove the back binding bar and the two rollers, then run the machine on the planks till the centre of the machine be exactly at the centre of the plant; replace the two back rollers and binding-bar, and secure the wheels with stones or wedges, likewise place a piece of board across the planks in front for the feet of the machine to rest on; next bring up the ends of the lifting-ropes over the rollers. This part of the work requires a little nicety, as the ends of each rope must be done exactly in the same way. The rope is first brought up and over the top of the inner roller three times, winding it always towards the centre of the roller; then take it over the top of the outer roller, and work it also towards the centre, where hooks are placed for fixing the ends of the ropes on, each rope being previously supplied with suitable strings for the purpose. All the ropes being similarly adjusted, the plant is now ready for lifting and removal. The foregoing operation is easily accomplished with two men, but the lifting and removal requires more; this, however, depends on the size and weight of the plant to be raised, a moderate sized ball, say fifteen cwt. or eighteen cwt., can easily be lifted by four men, but if larger six or eight men will be required. If the tree or shrub is very tall, it will be desirable to have two guy ropes to steady the top and keep it perpendicular during the lifting and transmission. Each roller is provided with a cross-wheeled handle, and the outer rollers have a series of iron-bound holes pierced through them. By means of two round iron levers and the wheeled handles, the plant is easily wound up both back and front at the same time. The strong crank catches at each end of the inner rollers prevent the possibility of the plant running down, and secure it firmly at every turn, when re-adjusting the levers. After the plant has been raised high enough to clear the bottom of the wheels, the levers can then be pushed through the holes so as to rest either on the inner roller or binding bar; this will doubly secure the plant, and hold it tight in its position, till such time as it is conveyed to its destination. If the plant has to be taken over clean gravel walks, it is necessary to put a piece of canvas under the ball to prevent any loose earth from falling. If the distance for removal is not great, it can easily be taken along by the men employed in the lifting, but if the distance for removal is considerable, the most convenient way will be to attach a horse and draw it backwards, taking with it, if necessary, the two planks, foot-board, and cog wedges. If many removals are going on, it is desirable to keep a double set of planks and foot-boards. The hole for its reception being prepared, in all cases taking care that it is not less than three feet beyond the diameter of the ball to be put in, place over it the two planks, adjusting them to the width of the wheels, then run the machine with the plant backwards upon it, till right over the centre of the hole, place the cog-wedges to the wheels, and adjust the foot-board as before, and arrange the men as at the lifting. After taking off the strain, sufficient to remove the four crank catches, lower gently into the pit, by holding back the handles and levers. If the pit is found to be too deep, raise, and put in some soil, and then lower again. When properly placed, undo all the ropes, and

take off the two back rollers and binding bar, and remove the machine. Immediately the machine is withdrawn from the plant, but before it is taken off the planks, put on the two rollers and binding bar, to prevent the possibility of twisting the machine by taking it upon uneven ground. The machine and planks being removed, withdraw the two lifting ropes, which will be easily done, owing to the curve on the bottom of the lifting boards. The bottom boards can also be taken out by a slight leaning either to the one side or the other, placing at the same time a little earth below to keep the plant in its upright position. If attention has been paid to mark the best side previous to the first tying up of the branches, the plant can be easily turned, so that the best part shall face any particular side; if this has not been done, it is necessary to loosen down the whole top, so as properly to adjust it—that, however, is very inconvenient till such time as the plant has been filled in and watered. After the plant has been properly secured in its upright position, take care to have the soil firmly fixed below the bottom of the ball all round, to prevent it sinking down on any one side after the water has been applied; next remove the rack pins and binding ropes, staves and canvas, loosen out all the roots and fill in with prepared soil, taking care to adjust the roots in a horizontal manner while filling in; afterwards prepare a basin round it to retain water. In all cases apply water freely, but more particularly with summer transplants. After the branches have been loosened down, syringe freely if the weather be dry, and cover the surface of the ground, under the branches, with fresh cut Grass to prevent the surface of the soil from drying up. In the case of summer transplanted trees and evergreens, it is a good plan to roll some Hypnum or Sphagnum Moss round the stems and chief branches, as it assists in keeping the bark moist. I may state that these machines are in constant use in the Royal Botanical Gardens, Edinburgh, in which they are employed with complete success. J. M'NAB.

Desfontainea spinosa in Ireland.—This handsome evergreen shrub is perfectly hardy in the south of Ireland. We saw a plant of it the other day in the gardens of E. Pike, Esq., Bessborough, co. Cork, which had been standing out without any protection for the past three or four years, and it was in the best possible condition, producing at the time a large quantity of its beautiful scarlet yellow-tipped blossoms. Mr. Frazer, Mr. Pike's gardener, propagates it as follows:—In the autumn, say about the end of September or early in October, he takes off his cuttings (small bits of the current year's growth), and inserts them as one would *Calceolaria* cuttings, under a common hand-glass out of doors, using light sandy soil for the purpose. About this time of the year he lifts his young plants and pots them one in each pot, and as soon as the roots reach the sides of the pot, and the plants become established, they are transplanted to their future quarters out of doors, where they appear to thrive as well as any hardy shrub with which we are acquainted.—*Gardeners' Record*.

Lagerstroemia elegans carnea.—A new variety, raised from seed of *L. elegans* by M. F. Sahut, of Montpellier. It has the habit and vigorous growth of its parent, resembling it also in the structure of the flowers, which, as is well known, differs from that of the flowers of *L. indica*; but the flowers of *L. e. carnea*, instead of being of a brilliant deep rose-colour, like those of *L. elegans*, are of a delicate Rose or flesh-colour, becoming almost white when they

begin to fade. In the coloration of the flowers this variety differs essentially from the three other varieties of *Lagerstroemia* at present in cultivation, and forms a fourth type, not less free-flowering and not less remarkable than the others in a genus, which up to the present has exhibited few variations. In this respect it is a valuable acquisition, for few plants flower more splendidly than the *Lagerstroemias*.

Tecoma (Bignonia) grandiflora rubra.—A very fine variety, producing its flowers freely and continuously. They are of the same size as the flowers of *T. grandiflora*, but are of a handsome dark red colour, like those of *T. atropurpurea*, of which this variety is a seedling. The plant is more vigorous than *T. grandiflora* and its foliage is of a dark green colour; moreover, instead of flowering all at once like *T. grandiflora*, it continues to bloom all through the summer. Nothing can surpass its effect when in full bloom. M. Sahut, of Montpellier, the raiser, has several specimens trained on stakes to a height of 6½ feet with a spread of branches nearly 6½ feet in diameter, which all through this summer were literally covered with large red flowers. It is a much more effective plant than any other *Tecoma* or *Bignonia* in cultivation, whether grown as a climbing plant or trained to a stem on stakes of different heights.

Winter Embellishment.

When the deciduous trees and shrubs have shed their summer garments, and stand out against the sky in bold relief of manifold naked sprays, the sight of a green leaf is at once a relief and a joy. Too little importance has been hitherto attached to the necessity of planting for winter. Perhaps some degree of ignorance as to what are the most suitable subjects may be advanced as the reason why many of our finest evergreens are neglected. In general, the view of a flower garden in winter is of a dismal character. Bare beds and rotting stems of semi-herbaceous plants furnishing all that is to be seen. A different effect might be easily attained by planting any of the following:—Common Holly, *Rhamnus*, *Garrya*, *Laurustinus*, Common Laurel, *Mabonia* in variety, Evergreen Oak, Box, *Aucuba*, *Euonymus japonicus*, *Ligustrum japonicum*, and many kinds of Conifers. In addition to these, there are some shrubs which, although deciduous, maintain through the winter months a special charm from the coloration of their bark or berries. Among these may be mentioned *Cornus alba*, the yellow Willow (*Salix vitellina*), the yellow-barked Peach (*Persica lutea*), the Golden Ash (*Fraxinus lutea*), the coral-twigged and yellow-twigged Lime (*Tilia corallina* and *T. lutea*). These trees, especially the Lime, the Ash, and the Peach, may easily be kept in the condition of shrubs by judicious pruning or pinching. As a carpet for such plantings, Ivy or Periwinkle may be used. Of the latter there are two species—*Vinca major* and *V. herbacea*, of which there are variegated varieties. Only those who have seen it can have any idea of the effect of a specimen of *Cornus alba* surrounded in winter with a carpet of Ivy or St. John's Wort (*Hypericum calycinum*) which, as a carpeting plant, is not sufficiently used.—W. M.

Foliage Tints.—The value of trees with light green foliage in a landscape is well illustrated in the view from Kew Bridge up the Thames. On the bank to the left hand stand one or two Weeping Ash trees, and on the end of the island, which occupies the centre of the river, there is a group of young Sycamores. But for the light green foliage of both these groups of trees, the view up the river would be of the most sombre character, stretching away over a long reach, bordered on either side by a continuous mass of the unrelieved dark gloomy green of the Elms.—M.



M'Nab's Transplanting Machine.

THE FLOWER GARDEN.

ROSE-RAISING.

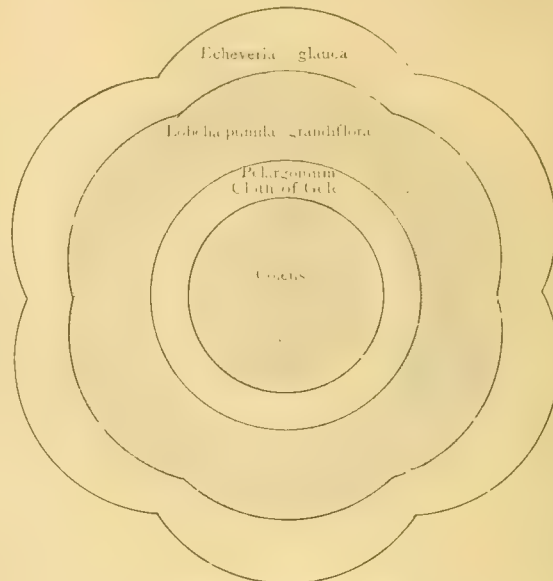
THE extent to which the raising of Roses from seeds is carried in France may be conceived from the statement of one Rose-grower—that in the year 1865 the larvæ of the cockchafer (*vers blancs*) destroyed more than 100,000 of his seedling Roses. The details of the French mode of raising Roses from seeds, as given by M. Bossin, in the last number of the *Revue Horticole*, are as follows:—"In autumn, the finest hips are selected and put by to dry for some time after being plucked. The seed is then rubbed out, and sown either at once or in the following spring. Large seed-pans about 6 inches deep are generally used, but sometimes wooden boxes of the same depth are employed. These are well drained with crocks, and filled with heath soil to within an inch or so of the top. The seeds are lightly sprinkled on the surface, and then pressed down with the hand, after which a slight covering of the same soil is dusted over them. The seed-pans are then removed to a conservatory or cool house for the winter. In April they are placed in the open air in a half-shady position, or under a cool frame if the weather is bad, as it has been this year. About this time the young plants are generally attacked by aphids, and must be fumigated or syringed with tobacco-water. Occasionally mildew makes its appearance, and must be met by dusting the plants with flowers of sulphur. If the sowing is deferred until spring the same method is to be observed, with this exception, that the seeds should be steeped for twenty-four hours in water before sowing, and the pots must be maintained in a condition of neither too great humidity nor dryness. Until all the seeds have germinated, frequent light sprinklings are much better than occasional heavy waterings. Sowings may also be made in the open air in the following manner. In a bed, lines or rows are drawn 3 or 4 inches deep. These are filled with heath-soil, on which the seed is sown as in pots. The young plants begin to make their appearance in May. It is not to be supposed that a seedling Rose displays the full force of its character at its first flowering. It generally takes a year or two before it becomes fixed. When a seedling shows something of promise, the French growers bud it on the Briar, and wait two or even three years for its full development. The number of seeds in a single fruit of the Rose is very variable, sometimes twenty-five or thirty, but most usually from twelve to twenty, and in the case of the wild Briar seldom over twenty. Those who wish to raise Briars from seed will do well to select hips of a longish form, as the seed which they contain has been found to produce the finest plants."

W. M.

FLOWER GARDENING IN VICTORIA PARK.

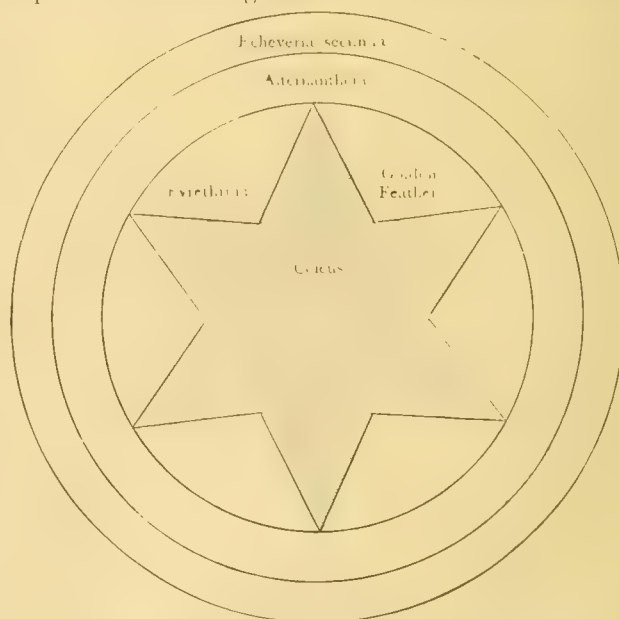
VICTORIA PARK is to the east-end of London what Hyde Park is to the west, and, on the whole, as far as floral display is concerned, the "east-enders" seem to be very fortunate. The park itself is somewhat barren and wild-looking, though relieved here and there by water, fringed with gracefully drooping Willows and a great variety of other hardy trees and shrubs. The flower gardening, however, is the main feature; it is, indeed, the best of the kind we have seen this season. Popular taste just now appears to favour the use of dwarf, dense, flowering and foliage plants for forming carpet beds, and these are certainly as effective as bright glowing colours ever can be, when symmetrically arranged in geometrical designs. The introduction of the *Alternantheras*, *Lobelia pumila grandiflora*, *Pyrethrum Golden Feather*, and other plants similar in habit, has rendered this style of flower-gardening simple and easy. Some of the beds here are very striking, and among them are some combinations which we have thought worth recording as likely to be of use next season to such as have not seen them. The first group of beds which came under our notice was a striking pair, circular in shape, the circumference being formed of six semi-circular segments, as shown in the annexed illustration. These were planted with a round mass of *Coleus Verschaffeltii* in the centre, encircled by a row of dwarf golden-leaved zonal *Pelargoniums*, similar to cloth of gold. This again was surrounded by a broad belt

of the beautiful blue *Lobelia pumila grandiflora*, the edge being nicely finished off with a double row of *Echeveria glauca*. This Succulent, when grown in a warm dry soil, has a silvery appearance when contrasted with decided dark colours, as the blue of *Lobelia pumila*, or the deep purple of *Iresine Lindenii*, and is invaluable as an edging plant, or for



Flower bed in Victoria Park.

filling the small compartments of carpet beds or borders. In another bed, similar in shape to the last, the centre consists of Mrs. Pollock *Pelargonium*, margined with *Coleus Verschaffeltii*, around which is a broad belt of Golden *Pyrethrum*, the whole being neatly margined with crimson *Alternanthera*. A double scroll bed here is very effective, though very simple in its arrangement. It is formed of *Alter-*

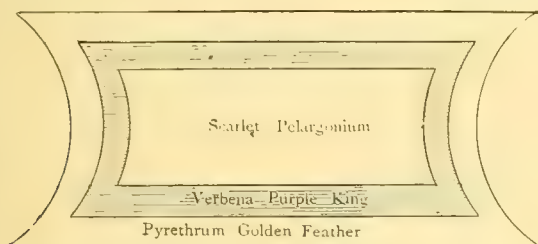


Flower bed in Victoria Park.

nthera amabilis, edged with a double row of *Echeveria secunda*, and is here and there dotted with large *Echeverias*, *Sempervivums*, and small circles and oblongs of *Pyrethrum Golden Feather*, *Mesembryanthemum cordifolium variegatum*, and other dwarf plants. The crimson *Alternanthera* contrasts well with the silvery edging and the golden foliage of

the *Pyrethrum*. As a dwarf yellow bedder, or edging, this last has much to recommend it. It grows freely, and may be raised from seed by the thousand. Seedlings may be pricked out closely for immediate effect, and then thinned out gradually as they increase in size. In sheltered positions on warm soils, it is perfectly hardy, and nearly as effective during winter as during the summer months. In a circular bed which we noticed, the centre was filled with *Pelargonium Bijou*, mixed with blue *Viola* (*Perfection*); this combination is popular this year, and is both bright and effective. Around the centre is a belt of *Iresine Lindenii*, the whole being finished off with a bright yellow band of *Golden Feather Pyrethrum*.

One feature in this park is worth imitation, and that is all the borders are well stocked with hardy herbaceous and bedding plants interspersed with bulbs and annuals. Borders of this kind are very interesting, and should be more general in all our best public gardens. *Gladioli* and *Tiger Lilies* are conspicuous, backed by hardy shrubs, among which bushes of *Cape Bladder Senna* (*Sutherlandia frutescens*) are conspicuous, being heavily laden with purple-tinted inflated seed-vessels. A round bed of mixed *Verbenas*, purple, scarlet, and white, edged with the now neglected *Gazania splendens* struck me as being both bright and distinct. Some of these mixed beds are very pretty, and none more so than one consisting of *Centaurea ragusina*, mixed with the purple *Verbena venosa*, and another planted with dwarf orange-flowered *Tropæolums*, mixed with blue *Viola*, edged with *Alternanthera amœna* and *Golden Thyme*. The centre of attraction, in the way of bedding plants, is, however, the series of oblong and round beds arranged in a semi-circle near the centre of the park; these are skilfully planted with good materials, the carpet beds being perhaps the best.



Flower bed in Victoria Park.

These beds are arranged symmetrically, the corresponding beds in each quadrant being counterparts of each other. The centre bed in this series is nicely planted, its eye, as it were, being filled with a golden-leaved *Zonal Pelargonium*, margined with lines or belts of *Coleus Verschaffeltii*, golden *Pyrethrum*, and crimson *Alternanthera*, the whole being neatly margined with a double row of *Echeveria secunda*, while the two lateral appendages are each filled in with a white-leaved *Zonal* in the way of *Bijou*, and margined like the central portion. This arrangement struck us as being very effective. A pair of oblong beds in the second circle are planted with *Centaurea ragusina*, mixed with *Verbena venosa*. This is again surrounded by a belt of the dark-leaved *Iresine Lindenii*, and the whole is very effectively finished off with a soft golden margin of *Mesembryanthemum cordifolium*. The three prominent colours in these beds—purple, soft yellow, and silvery white—harmonise well with each other. One of the most effective circular beds we have seen this season, was formed of a mass of *Viola Blue Perfection*, mixed with *Pelargonium Bijou*, and margined with belts of *Alternanthera amœna*, *Pyrethrum Golden Feather*, and a double row of *Echeveria glauca*. Two oblong beds, planted with scarlet *Pelargoniums* in the centre, surrounded by a belt of *Verbena Purple King*, and neatly finished off with an edging of *Golden Feather*, formed a rich and telling combination of purple, scarlet, and gold. One drawback to the effectiveness of this series of beds, is the failure of the *Calceolarias*, which just now are scarcely more effective than the *Marigolds* in St. Paul's Churchyard. This remark applies not only to *Victoria Park*, but also to most other gardens round London, both public and private. Before leaving the bedding plants for the sub-tropical walk, two geometrical borders, enclosing specimen variegated *Hollies* and other shrubs, are worthy of notice. In the circular one, triangular

and diamond-shaped spaces are formed by diagonal lines of *Zonal Pelargoniums*; these are filled in with *Alternanthera* and *Coleus* respectively, the margin being formed of two belts of *Mesembryanthemum cordifolium*, edged with dwarf blue *Lobelia* (*L. pumila grandiflora*). The other is planted with *Amaranthus*, and scarlet, white, and pink-flowered *Zonal Pelargoniums* in semi-circles, the triangles in front being planted with bronze *Zonals* and blue *Lobelia* alternately, and the triple edging, which is one of the most distinct we have seen, is formed of *Iresine Lindenii*, *Pyrethrum Golden Feather*, and the silvery-leaved *Cerastium tomentosum*. The sinuous sub-tropical walk is one of the most interesting in the Park, and well worth notice. A mass of the pretty bright green-leaved *Acacia Lophantha*, is here very effective, as is also a neighbouring clump of dark-leaved *Cannas*, edged with *Abutilon Thompsoniæ*. Variegated *Maize*, edged with *Iresine Lindenii*, makes a bright and distinct-looking group, well worth repeating in warm sheltered localities. A small rockery, backed by *Hollies* and other evergreen shrubs, is planted with a very interesting collection of *Alpine* plants and *Succulents*, interspersed here and there with foliage and flowering plants on a dense carpet of dwarf *Saxifragas* and *Sedums*. This arrangement, which has been well carried out at *Battersea Park* for some years, is a good one, inasmuch as it affords an opportunity for the introduction of choice *Succulents* or new plants before the stock is sufficiently large for carpets, masses, or edgings. The plants used here are *Chamaepeuce diacantha*, *Agave americana* and its variegated varieties, *Sempervivum canariense* and *tabulaforme*, *Palms*, *Aloes*, *Cacti*, and *Dracænas* in variety. Ivy-leaved *Pelargoniums* are very effective, drooping over the over-hanging or projecting masses of rock-work; they grow and flower freely, and are graceful in habit. *Cannas*, variegated *Ivies*, and dwarf *Conifers* complete the group, the whole being neatly finished off with a margin of *Echeveria secunda*. A good group of *Yuccas* is just past its best on a sloping bank, backed by variegated *Hollies* and other evergreen shrubs. *Yuccas* in masses are among the noblest ornaments that can be added to our public gardens. A very distinct-looking bed here is planted with *Wigandias*, around which is a circle of the crimson *Chilian Beet*, and a dwarf, but effective, edging of *Tussilago Farfara variegata*, a very distinct plant, but difficult to eradicate when once introduced, and it has a bad habit of coming up very irregularly each successive year after it is first planted. A round bed of *Amarantus salicifolius*, edged with golden *Abutilon*, and fringed with a double row of *Echeverias* is just showing colour, and promises to be very effective in a week or two. So far as our experience of this plant goes, it likes a shady position, as it becomes bare and leggy on dry hot soils. A mass of light-coloured *Cannas*, edged with *Abutilon* and *Iresine Lindenii*, has a fresh and effective appearance; and the same remark applies with equal force to a pair of oblong beds filled with bronze-leaved *Cannas*, edged with the silvery-leaved *Centaurea ragusina*. A very good mixed bed of foliage plants consists of *Ficus elastica*, green and variegated *Maize*, *Cannas*, *Amaranthus*, *Coleus*, *Solanums*, *Acacias*, and *Dracænas*. The variegated *Maize* is 3 feet high, and very bright and distinct; while the green form is fully 6 feet high and flowers freely, its drooping silky tassels having a novel effect. A pair of carpet beds in this group are planted very prettily, though the beds themselves are heavy in shape, being something like dumb bells. The central mass is of crimson *Alternanthera*, surrounded by a belt of golden *Pyrethrum*, and edged with a double row of *Echeveria secunda*. A nice pair of oblong beds, planted with *Coleus Verschaffeltii*, margined with the golden-foliaged *Mesembryanthemum*, are distinct and bright in colour. A round bed here is also very prettily arranged, the central portion being a star-shaped mass of crimson *Coleus*, the angles formed by each ray being filled in with golden *Pyrethrum*. A belt of *Alternanthera amœna* surrounds these, and the whole is fringed with a double row of *Echeveria secunda*. A bed of this kind, besides possessing brilliant colours well contrasted with each other, has also some claim to elegance in form and arrangement, so far as it is possible to attain these desiderata in formal or geometrical designs. A mass of the purple-leaved *Dracæna ferrea*, edged with golden variegated *Abutilon*, is

very distinct, and a few Palms, Dracaenas, Yuccas, and Musas, dotted in here and there on the fresh green turf, assist very materially in relieving the formal sameness of the round and oblong beds. One feature we must not overlook, and that is some large Agaves that have been set out round the semi-circular flower garden with excellent effect. In short, a visit to Victoria Park just now will amply repay any one interested in bedding arrangements and other, for the time being, fashionable modes of decorating our flower gardens. F. W. B.

THE NEW ROSE, ALEXANDER DICKSON.

As little appears to be known about this new Rose, a short account of it may not prove uninteresting. It was raised by Mr. Dickson, and was first shown at the National Rose Exhibition, held at Dublin in July, 1872. Mr. Dickson showed a large box filled with it, which was much admired. Several nurserymen gave orders for plants of it to be delivered in the proper season, and Mr. John Harrison, of the North of England Rose Nursery, near Darlington, was amongst the number who ordered plants. Last summer he kindly gave me a few buds of this new Rose, which I inserted in Briar stocks. These took, and on the 28th of last month I was gratified with the sight of a Rose I had previously heard highly spoken of. Mr. Harrison had not said one word too much in its favour, for it really is one of the finest exhibition Roses that has made its appearance for some years back. The following is a faithful description of it:—Its wood is green, and the foliage handsome. The petals are large and thick, causing it to open freely. In size it is large and full. In form it resembles *Comtesse de Chabrilland*, but the blooms are larger; the colour is very like that of the well-known Rose *Madame Charles Wood*, but the back part of the petals has somewhat of a lilac tinge, or what may be termed a glaucous shade—it is highly fragrant, no Rose in cultivation being more so. Its habit is good, and it appears to send out only one bloom from each shoot, and that a large one. I have seen several blooms in my own garden, and they have all been good. I can safely recommend it as an acquisition. HENRY TAYLOR.

Rose Cottage, Encoats, Bedale.

Hablitzia tamnoides.—This is a very ornamental hardy herbaceous plant, of a climbing character, and one that produces its cymes of greenish-yellow flowers in the greatest profusion. The leaves which are cordate-acuminate, and entire, are of a deep green colour; when the plants are tied to a strong stake or trellis they reach a height of 8, 9, or 10 feet, and have a very pleasing appearance. The flowers resemble dense masses of Grape Vine flowers, and begin to expand as soon as the plant reaches the height of a foot or 18 inches, say in May, and continue in flower throughout the whole summer and greater portion of the autumn. This plant requires a good soil, plenty of moisture in summer, freedom from stagnant water in winter, and forms a good subject for planting in open situations in the wild garden, or on large rock or root works, or where it could be used to clothe the stems of naked trunks of trees.—JAMES FORBES, *Perth.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Cardinal Monkey Flower (*Mimulus cardinalis*).—This Californian *Mimulus*, which is little more than an annual plant on the London and other clays, is a fine, tall, and long-enduring perennial on some warm soils. I saw some against a cottage wall in Herefordshire the other day, quite 4 feet high, and very showy.—W.

Yellow Canary Climber (*Tropæolum canariense*).—Round a cottage door in Kent, I recently observed two plants of this trained on two strings so as to completely surround the doorway. The effect was exceedingly happy, the plants being in full bloom, and forming a pretty frame around the door. This simple mode of training might be applied in all cases where the door is destitute of a porch or verandah.—W. M.

Climbers on Cottage Walls.—One of the finest effects we have seen for some time was presented to us a few days since, during our visit to a pretty village in Kent, by some plants of *Calystegia dahurica*, trained on a cottage wall. Strings had been fastened from the ground to the eave of the cottage (a distance of about 20 feet), about a foot apart, and up these the plants had climbed the entire length, and even hung down two or three feet from the eave where their support ceased. The plants so trained were so many stately pillars of dense dark green foliage, agreeably diversified by the numerous large and handsome flowers.

Best Light and Best Dark Standard Roses.—I should esteem it a favour if you would kindly give me the names of three of the best dark standard Roses, and three of the best light kinds.—YOSSEMIT. [The three dark kinds may consist of *Prince Camille de Rohan*, maroon; *S. Reynolds Hole*, crimson, flushed maroon; and *Louis Van Houtte*, rich deep shaded rose. For three light sorts take *Maréchal Niel*, yellow; *Boule de Neige*, white; and *Baroness Rothschild*, blush. Another good selection is:—For the three dark, *Chas. Lefebvre*, *Madame Victor Verdier*, and *Baron de Bonstetten*. For the three light ones, *Souvenir de la Malmaison*, *Madame Alfred de Rougemont*, and *Madame Vidot*.]

THE KITCHEN GARDEN.

CHIVES.

THIS popular old garden plant is a native of Britain, though a rare one, and inhabits a wide range over northern and temperate Europe and Russian Asia. It is a thoroughly hardy herbaceous plant, and, being required for the leaves only, it may be left in the same spot for years. When making a plantation, dig up a few old tufts, pull them in pieces a couple of inches across, and plant in tufts at about 8 inches apart, or make an edging of the plant around a bed devoted to some other herb. It, of course, does best in a rich light soil, but will thrive anywhere. The Chive is an exceedingly useful vegetable on account of its early growth; indeed a few roots placed in a warm southerly aspect will produce cuttings of nice green shoots all the winter for salads when Onions are scarce and dear. It is also very useful for soups and broth. It is most invaluable for poultry at all seasons of the year, more particularly for young early chickens, turkeys, and ducks, chopped up and intermixed in their food. They will pick out very soon every bit of Chives: it keeps them warm and healthy. For very early broods I always took care to have a few tufts potted and placed in shelter or heat for a supply. B.

THE WELSH ONION.

(*ALLIUM FISTULOSUM*).

THIS is really a Siberian species, very hardy, with hollow cylindrical leaves, and no bulbs. It is a herbaceous plant, in cultivation treated as a biennial—sown in midsummer for use in salads the following spring. Being very hardy, it is worthy of more extended culture. It is the *ciboule* of the French, and much more grown in France than with us. They sow a crop in February and March for transplanting in April and May, and another in the end of July. The Welsh Onion is cultivated but very little now for use in this country; formerly on account of its earliness and hardiness, it was cultivated in almost every garden, and grown to a considerable extent for the London market from fifty to sixty years ago, but through its toughness and strong acrid flavour as soon as the season advanced and the plants got a little sun, they could not be made use of with any pleasure. The two-bladed, an early quick grower, took its place, and many other good varieties have been since introduced, any one of which, if sown thickly about the middle of August, is fit for drawing for use during the whole winter, and also for transplanting for an early crop of bulbs in the following February. With a little management and foresight, both young Onions, and bulbs may be produced every day in the year. J. B.

THE TREE ONION

THIS we suppose to be simply a variety of the common Onion of our gardens, but it is a curiosity worth growing. Sets of bulbs, and sometimes pretty large ones, are formed on the stem, and from them another shoot starts forth, to be again surmounted by sets of smaller bulbs, and so on. We have had them a yard or more long, with three crowns of bulbs on many stems. These bulbs, if not so good for ordinary use as the common Onion, form excellent pickles. Some bulbs are also formed at the base, but not many. It may be propagated from either ground or stem bulbs, planted at about a foot apart each way in April, just putting the bulbs deep enough in the ground to be held firmly therein. The very small stem-bulbs might be planted thicker. When the long bulb-bearing stems push out they should be staked up. We have had ere now much difficulty in getting this plant, but it is to be had here and there. When mature, in early autumn, both stem-bulbs and underground ones should be gathered in and stored in a cool dry place. The tree Onion was formerly cultivated to some extent in the days of the old Welsh Onion, but since we have had so many useful, good, and profitable varieties of the Onion introduced, this variety has been almost discarded from our gardens. Only as a curiosity it is to be found in a few places; it never was of much value as an article for use, and there never was any dependence on its making any profitable returns for its culture. JAMES BARNES.

MUSHROOM CULTURE OUT-OF-DOORS.

PREPARATION OF THE MANURE.—It is of vital importance to let the rank steam out. When you get the manure from the stables throw it into a round heap, and give a good watering with manure-water. Let it lie until the third day, then turn it over, and give another shake up. When well sweated, which will be in three days, another turn will be necessary; it will then be ready for use.

MAKING THE BED.—Making the bed is of secondary importance. Mark out the bed 3 feet wide at bottom, and, of course, of whatever length you have manure for. Put the dung on in layers of 6 inches the whole length of the bed, and spread out at the rate of four shovelfuls of dry soil to every barrowful of dung; tread down by stamping on it as the work proceeds, until you get the required height; then clap the bed all over with the back of a light spade, drawing the spade downwards at every stroke to, as it were, seal the bed. Cover up with a mat immediately, and on no account allow rain to enter. Place one stick in the middle, and one at each end. Feel the heat at least once a day; when found milk-warm, under rather than over, the bed is fit for spawning. Break the spawn into pieces about the size of eggs, taking each piece in the right hand, and with the left lift the material upwards, inserting the spawn at 10 inches apart all over the bed; afterwards give it another beating, making the surface look smooth and smart. This being done, set the line 9 inches from the edge of the bed, and cut the soil down inclining outwards, making a good foundation. To cover the surface of the bed any kind of soil will do. Mine is light and rich, but just the common garden stuff. Put 2½ inches on before beating, then sprinkle over with sand to make it work clean; begin at one end, and again beat it well, always drawing the spade downwards as the stroke is delivered, till you get the whole finished. Cover up if in winter—say October—with 5 inches of straw or very dry dung, placed so that the wet cannot get in. It will now have the appearance of the roof of a hayrick. Put a mat lengthways over all, and re-insert the sticks, looking at them sometimes to determine whether the bed is getting too hot, or over milk-warm; if so, uncover, but put the mat on this time crossways, to keep out the wet. In this way abundance of Mushrooms are grown in the open air. R. GILBERT.

LAVENDER CULTURE IN HERTFORDSHIRE.

COMPARATIVELY few persons are aware to how large an extent the culture of Lavender for commercial purposes is carried on within a radius of thirty miles from London. In the county of Surrey alone there are nearly 350 acres of land devoted to its growth; and the total extent of the Lavender fields in the London district cannot fall far short of 500 acres. Although it is only of recent years that the culture of the plant in England has been sufficiently extensive to raise it to the dignity of a recognised industry, the dried flowers have been used from time immemorial as a perfume; indeed, it acquired the name given to it by the Romans, *Lavandula*, from the use to which it was applied in scenting the water of the bath. The Lavender plant grows wild in some parts of Italy and the island of Sicily; but it is uncertain at what period it was introduced into England. Shakespeare, in the "Winter's Tale," puts these words in the mouth of Perdita:—

Here's flowers for you;
Hot Lavender, Mint, Savory, Marjoram;
The Marigold, that goes to bed with the sun,
And with him rises weeping: these are flowers
Of middle summer.

True, the scene is laid in Bohemia; but it is evident by the context that the plants named were such as were usually to be found in an English shepherd's garden as early as the time of Elizabeth. Passing over the intervening three centuries, let us come at once to the subject of our sketch—the Lavender fields of Hertfordshire. An hour's journey by the Great Northern Railway, through a charming tract of country, past the historic houses of Hatfield and Knebworth, which lie hidden by trees on the traveller's right hand; over that grand engineering mistake, the Welwyn Viaduct, beneath which trickles the tinny river Mimram, through Stevenage, where Lucas, the hermit, wrapped in his dirty blanket, still remains as when he served Charles Dickens as a model for his Tom Tiddler—passing all these, we at length find ourselves, as the train slackens its speed, at the bottom of what seems to be an extensive chalk-pit. This is the

northern outcrop of the London basin; and the station at which we alight, as soon as the deep white cutting is passed, is Hitchin. At this place, some fifty years ago, the experiment was first made by a Mr. Perks of growing Lavender as a source of profit. So well did it succeed, that there are now about 35 acres of land in Hitchin devoted to its culture, yielding sufficient essential oil to produce upwards of 2,000 gallons of Lavender-water annually. A visit to the fields and laboratory, during the latter part of July or the beginning of August, when the flowers are in full bloom, is in itself worth the trouble of a journey to Hitchin, to say nothing of the special attractions which the neighbourhood offers to the botanist, geologist, and antiquary.

The largest field is situated at the western side of the quaint old town, near the house in which George Chapman, the friend of Shakespeare and Ben Johnson, completed his translation of Homer. The young plants are put out in November, at a uniform distance of a yard apart. Formerly they were placed at only half that distance; but it is found that a heavier yield is produced from plants set a yard apart than from double the number at only 18 inches. When three years old, the plant is at its best; and, when it reaches the age of seven years, it has made so much wood that it is more profitable to uproot it and set a fresh plant. The harvest time depends much on the state of the weather; but it usually commences about the first week in August. The flowers are cut with a sickle, bound up in small sheaves, and immediately carried to the distillery. There the stalks are cut off, leaving but little more than the flowers, by which the bouquet of the oil, afterwards extracted, is much improved, though the quantity of the oil is sensibly diminished. Much care is needed on the part of those who handle the sheaves in the distilling-house to guard against being stung by the bees which remain attached to the flowers. The temperance, industry, and providence of these insects are proverbial; yet their behaviour in Lavender fields, especially towards the end of the season, when the flowers are fully developed, cannot be too severely reprobated. So careless are they of the good reputation they have earned, that they refuse to leave their luscious feast even when it is laid on the trimming bench; and hundreds are thrown into the still, notwithstanding the efforts to dislodge them, in a state of helpless intoxication.

After the flowers are separated from the stalks, they are put in the still, which is a copper vessel holding about 200 gallons, beneath which is a furnace. The flowers are pressed down tight, after which the still is filled with boiling water, and the head carefully fitted on and luted with clay or linseed meal, so as to prevent the escape of the steam. The head somewhat resembles an enormous tobacco-pipe, the bowl being placed over the still. The stem of the pipe, called the worm, is coiled round and round in a vessel of cold water known as the worm-tub. As the steam is driven off through the head of the still, it is condensed in passing through the worm-tub, and runs into a vessel beneath. The essential oil is brought away with the condensed steam and floats on the top. A siphon sucks out the water beneath; and as, in its passage through the worm, it has become impregnated with the oil, it is utilised by being made hot, and again put into the still, to boil the next batch. As the water in the worm-tub becomes heated by the steam-tube passing through it, cold water is injected from beneath, which forces off the upper portion of the water, which has become too hot to perform its task of condensation. In about four hours the still has given off all its steam, and the result is about a pint of essential oil, of a light yellow colour. In some seasons it will fall far short of that quantity, while at other times it will greatly exceed it. When the condensed steam and oil have ceased to flow the head of the still is hoisted off, the sodden mass of flowers is taken out with long forks, and the still is re-filled. The refuse is taken back to the fields, and there allowed to remain until it is used as manure for the next year's crop. When the oil is first distilled it has a peculiar empyreumatic odour; but by being kept in bottles for twelve months it loses much of its harshness. It is still, however, unfit to be used as a perfume in its natural state. In order to convert the essential oil into what is known as Lavender-water, it is mixed with from twenty to forty times its bulk of spirit, and with just a trace of neroli, or other essential oil, according to the taste of the compounder.

Some idea of the enormous consumption of Lavender-oil may be gained from the fact, that there is annually produced in England sufficient oil to produce nearly 30,000 gallons of spirit of Lavender. A large quantity is used in the production of other perfumes of more pretentious names. Soaps and toilet-washes are chiefly scented with French and Italian oil, which is worth but from 8s. to 10s. a pound, while the English oil is valued at four times that price. The difference in the value is chiefly due to the fact, that in the foreign distilleries the whole of the stalks, and even the leaves, are put in the still; whereas in England, particularly at Hitchin, where even more care is taken than in the Surrey fields, nothing but the choicest blossoms are used.—*Chambers's Journal*.

THE GARDEN FLORA.

NEW AND RARE PLANTS RECENTLY FIGURED.

Rhododendron Chamæcistus. This is a pretty species of Liliputian proportions, forming a dense mass of dark green foliage but a few inches high, and bearing white flowers tinted with pale rose. It is a native of the Austrian Alps. It does tolerably well planted in peat on a cool bottom, and is a nice addition to Alpine rock plants, which are just now receiving some amount of the attention they deserve.

Double-flowered Oxalis (*O. cernua* fl. pl.).—A pretty variety, bearing large double flowers of a bright golden-yellow colour, elevated well above the deep green foliage. It is effective as a pot plant for the greenhouse or conservatory, or it may be planted out in the herbaceous border during the summer months. It is a native of Sicily, and not uncommon in the environs of Palermo.

Caucasian Iris (*I. Iberica*).—A dwarf species from the Caucasus, bearing large greenish-lilac and purple-brown flowers. The foliage is slender and of a dark green colour. The plant is well adapted either for a sheltered position in the herbaceous border or for pot culture.

Variegated Oxalis (*O. corniculata variegata*).—A nice variety of the green or copper-leaved species, so troublesome as a weed in some gardens, from which it is distinguished by being variegated with bright rose. The rosy tint is very irregular in its distribution, some of the leaflets being all rose, while others are only slightly striped or mottled. It bears bright yellow flowers, and may prove useful in dry sandy soils for the carpet bedding now so much in vogue.

Humboldt's Lily (*L. Humboldtii*).—A noble Californian Lily having its leaves in whorls, and bearing bright orange flowers with recurved segments heavily blotched at the base with dark crimson. It is quite hardy, and succeeds well planted in a deep, rich, and warm soil, plentifully supplied with moisture.—*Flore des Serres*.

Riviere's Zygopetalum (*Z. Rivieri*).—A charming Brazilian Orchid, most probably a form of *Z. Mackayi*, and well worth growing for its fragrant flowers, which are borne profusely during the winter months, and last a long time in beauty. The plant has the habit of *Z. Mackayi*, and the flowers are similar in colour but more densely streaked with purple hairy lines on the broad white lip. It is easily grown in an ordinary plant stove in fibrous peat and fresh sphagnum.

Reddish Salvia (*S. rutilans*).—A free-flowering species, useful for autumn and winter flowering along with its congeners, *S. splendens*, *S. gesnerifolia*, and *S. Heerii*, and succeeding perfectly with the same treatment. The present species bears a terminal panicle of bright scarlet, the mouth of the tube being streaked with white. The foliage somewhat resembles that of *S. splendens*, but the flowers are smaller with green calyces.—*Revue Horticole*.

Cattleya chocoensis.—We have here a very striking plant, which may be taken as the type of a well-defined section of this already large genus. The flowers are remarkably compact, owing to the pure white petals being sessile, and of great breadth. The upper edges of the petals overlap each other, giving a very full appearance to the flower. The short rounded lip is of a pure white colour (slightly tinted with rose in some varieties), and has a blotch of lemon-yellow on the disc, the apex being tipped with a large blotch of crimson-purple. Like all its congeners, the species is very variable as to colour, a fact that adds to the interest in growing several individuals of the same species. It comes from Rio Atrata, New Granada, having been introduced by Mr. Wallis while collecting for M. Linden.—*L'Illustration Horticole*.

NETTLES.

Our native species are two, namely, first, *Urtica urens*, the small annual Stinging Nettle; second, *Urtica dioica*, the common perennial Stinging Nettle. Both these forms occur over the greater part of the world, but it is doubtful whether they are true natives beyond the warmer parts of Europe and Asia. They are essentially trackers of colonisation, and, as such, they ever follow the wanderings of the planter and farmer; and, just as we suppose them to have been introduced into this country from the east, so have they found a home in the west as emigrants from Europe, but especially so from England—the seeds of the *U. urens* being commonly met with among garden and flower seeds, while those of the *U. dioica* are often too plentiful among agricultural seeds.

The first species, *U. urens*, is readily kept under by the hoe; the principles of its destruction being "never to sow it, and never to let it seed when sown" (Buckman). It is more common to the garden and waste places adjoining than to the farm, though we have some-

times seen it so thick in turnips as absolutely to smother out the crop, having doubtless being spread over the soil from a manure heap on which a few plants had matured their seed. This is a fertile source of weed cultivation, and one the farmer will do well to think of most seriously; how much so may be gathered from the fact that one luxuriant plant is capable of producing as many as 50,000 seeds; and we learn from Professor Buckman's table of the fecundity of weeds that a single plant of *U. dioica* may bear 100,000 seeds.

The common Stinging Nettle is a larger plant than the preceding, and occurs in different-sized clusters, growing from an underground creeping perennial root-stock. This part of the species is worthy of study, as, although the foliage is killed as though scalded with hot water by a few degrees of frost, if so cut down in spring it soon shoots up again; but if the plant be cut down with the scythe, or the leaves become destroyed by frost towards the fall of the year, it does not come up again until the following spring. Hence the farmer who cuts down Nettles with other rubbish when harvest is done, vainly thinks he has destroyed them, when in fact he has only done what a lowering of the temperature would have accomplished a few days later. From this we see the fallacy of the old doggerel which our rustics apply indifferently both to Thistles and Nettles, as follows:—

If Nettles (*Hettles*) be cut in Aprile,
They appear in a little while;
If in May, they peep out the next day;
If in June, they re-appear very soon;
If in July, they'll hardly die;
But if in August, die they must.

These verses point to the futility of attacking Nettles in the height of the growing season, and would lead us to suppose that, because they do not come up again that season when cut down late, therefore they are destroyed; but the truth is that, inasmuch as when cut late the leaves have already performed their functions, one of which has been to augment the spread and strength of the underground stems (rhizomata), it will be of little consequence whether we then cut them ourselves, or leave them to the tender mercies of "Jack Frost."

The plan which we recommend for the destruction of this pest, when it occurs in places where it cannot be forked out, is never to let the shoots make way more than a few inches above the soil, and, as constantly as they do so, to beat them down with a little ashen stick. Don't cut them with a scythe, as a clean wound heals quickly; but if they are repeatedly bruised, so that they can make no growth for a season, we usually find that the cure is most complete. If Nettles occur where they can be forked out, they may soon be got rid of by this means, or they may be ploughed deep and hand-picked. We have somewhere met with the following distich as applied to this weed, which we give for its practical value:—

Gif the Hettles be noisome to I,
Then I sow Hemp, and the Hettles will die.

This would be no bad way of winning a waste from Nettles, namely, to plough or dig up the ground and plant it with Hemp, as the latter, from being of a like natural order, would appropriate the food of the former to its own larger structure; and so, like big pigs amongst little ones, they would bully them out of food and life. But, in truth, nettles are not fond of cultivation. They make most way in waste places, but patience and perseverance soon conquer them; and nothing shows the sloven so much as an annually increasing crop of Nettles.—*Field*.

THE HUMMING-BIRD.

Poised in a sheeny mist
Of the dust of bloom,
Clasped to the Poppy's breast and kissed,
Baptized in pools of Violet perfume
From foot to plume!
Zephyr loves thy wings
Above all lovable things,
And brings them gifts with rapturous murmurings:
Thine is the golden reach of blooming hours,
Spirit of flowers!
Music follows thee,
And, continually,
Thy life is changed and sweetened happily,
Having no more than Rose-leaf shade of gloom,
O bird of bloom!
Thou art a winged thought
Of tropical hours,
With all the tropic's rare bloom-splendour fraught,
Surcharged with Beauty's indefinable powers,
Angel of flowers!

JAMES MAURICE THOMPSON.

WORK FOR THE WEEK. PRIVATE GARDENS.

The Flower Garden.—The ordinary routine of tying, staking, and watering must be attended to, and the lawn must be cleared of leaves every morning. Good stocky cuttings of Pelargoniums must now be struck for next year's use; they strike freely in the open border, and require no shade whatever. All other bedding plants may also now be increased by means of cuttings; but most of them require a well-shaded frame, in which they root satisfactorily. The propagation of Calceolarias and Gazanias may be left over for a month yet. Preserve the symmetry of the pattern in the flower-beds by pinching in all encroaching shoots; and, in the case of carpet-beds, the shears should be used weekly for the same purpose. Cut off all decaying flowers and leaves; and, by constant attention in the way of pinching, prevent such plants as are grown for the beauty of their leaves alone from flowering. Sow seeds of annuals for spring flowering; but quick-growing sorts had better be kept over till next month. Lift and transplant or pot Carnation layers that have rooted well, and cut over the exhausted flower-stalks. Lift Pansies in borders, divide and transplant them, and plant out the seedlings raised in boxes and warm borders. Cut off the points of Hollyhock stems, so as to improve and invigorate the flowers; and tie up loosely, yet firmly, the shoots of Dahlias. Give copious waterings to Phloxes, in order to prolong their blooming period, and plant out from frames or borders rooted cuttings of them; if these are of the finer sorts, and the ground is damp in winter, they should be potted and wintered in frames. Transplant Wallflowers from the seed-beds to any spare piece of ground, or amongst fruit-bushes and trees, so that the best of them may be lifted for spring flower-gardening, and the remainder left to produce flowers for cutting. Transplant Sweet Williams, Canterbury Bells, variegated and highly-coloured and lacinated Buda Kales, and other plants used for spring and early summer decoration. Lift bulbs of early blooming plants, such as the Crown Imperial, Tritomas, Ixias, Sparaxis, and transplant them soon afterwards in prepared ground; unless lifting is absolutely necessary it should not be annually practised. Continue to bud Roses on the Briar, but more particularly on the Manetti stocks, and unfasten the ligatures from such as were budded early and have now taken well. Prune hedges, and clear their bases of weeds. The transplanting of evergreens may now be safely practised, the ground being warm and the air well charged with moisture. Under such circumstances the plants become thoroughly established before cold weather sets in, and are ready to start into growth with their accustomed vigour in spring.

Hardy Fruit Garden.—The gathering of fruits, an operation which should be judiciously performed, will now occupy attention. Avoid rough handling, and too early or too late gathering, also gathering in wet weather or whilst the sun is shining brightly. Stone fruit trees may be budded during the first part of the month, and Apples and Pears may be "worked" until the end of the month. Attend particularly to the training of young fruit trees, and keep the points of their shoots free from aphides. Clear Raspberry bushes of old wood and spray young shoots, and tie up the strongest of the young canes. From early layered Strawberry runners strong young plants may now be obtained, which if planted at once will make a fine fruiting plantation next year. Forced plants that were planted out will now be producing a fair crop. Plants for spring forcing should be shifted into their fruiting pots.

MARKET GARDENS.

Crops in these have in general been excellent this year. Cabbages and Coleworts have come up well, Celery is making fine progress, and some of the earliest of it is already fit for market; of Vegetable Marrows there is an enormous crop; Cucumbers were rather backward at first, but when warm weather set in they began to fruit freely, and have borne abundantly ever since—those in frames are almost over, but those in pits will bear for some time yet; Scarlet Runners and French Beans have grown well and are still bearing abundantly, but the earliest crop of the latter is over; Tomatoes are a wonderful crop this year.

Beet, Carrots, and Parsnips.—The earliest crop of Beet will probably all be marketed this month, and the ground got in readiness for Cauliflower seed, Colewort plants, or Mushroom beds. Pull up and discard all plants showing flower.

Cabbages and Coleworts.—The best of the Cabbage crop will now be past, and the earliest of the Rosette Coleworts will be fit for use before the end of the month; in fact, they too often heart so early that there is no market for them, and, unless taken in time, they burst. Plant every vacant space, both under the shade of trees and in the open ground, with Coleworts in lines about 15 inches apart each way.

Cauliflower and Broccoli.—Remove such Lettuces as may

have been planted amongst the Cauliflowers as soon as they are fit for use, in order to give the latter more room and air. Prepare a well-sheltered piece of ground about the end of the month for the main sowing of Cauliflowers. Keep Broccoli ground well cleaned and the surface loose, and do not have the plants too thick, or they will not stand the winter well.

Celery.—Plant out main crops of this in rows, about 4 feet or 4½ feet apart. Water copiously in dry weather, and earth up such as require it. Some of those planted early will now be fit for use.

Cucumbers.—These will now require some care in order to have good fruit; for, if neglected, not only will red spider destroy the plants, but the fruit will be small, deformed, and yellow on the underside. Diseased leaves should be picked off at once; and crooked fruit, when very young, should be put into glasses, as one good Cucumber is worth half a dozen inferior ones; and the plants should be watered overhead with weak guano-water, and kept regularly pinched and regulated. After the end of the month, however, the produce from frames will hardly pay for the gathering; and, in that case, it is better to clear the plants out, and to use the ground for something else.

French Beans and Scarlet Runners.—The earliest crop of French Beans on borders will now be past, therefore remove the haulm, dig the ground, and sow Cabbage or Cauliflower seed in it. The first main crop of the same will be still in a moderate bearing condition, but the heaviest crops will be obtained from the second main crop and from the Scarlet Runners. The latest crops of French Beans should come into bearing towards the end of the month, and continue until cut down by frost. Never allow the pods to get too old before they are gathered, as in that case they exhaust the plants to no purpose.

Leeks and Onions.—Leeks from the oldest plantation should now be sent weekly to market, putting 8 into a bunch, and spreading out their root ends in the form of a fan. Transplant from the seed-beds into rows from 9 inches to a foot apart each way. Harvest Onions as soon as ripe, retaining for winter the soundest, and sending all thick-necked ones at once to market.

Lettuces.—Continue to plant out these wherever space can be spared for them, and sow Hardy Hammersmith and Bath Cos for winter use. Tie up and remove for market such as are fit for use, and support with stakes or otherwise such portions of the spring planting as have been selected for seeding purposes.

Mushrooms.—The earliest ridges for these in the open air should now be formed; but those intended for the main crop need not be made until September. In forming ridges, use good fermenting material that has been lately turned; put it into ridges about 2½ feet wide and 2 feet high, made very firm, and let the ridges stand about 5½ feet apart. When these are spawned, earthed over, and covered with litter, they will be found to be quite close enough together. Should they be too hot, they must be taken down until the dung begins to cool, and afterwards re-built. Manure must also be turned and got ready for the ridges hereafter to be made.

Spinach.—The round-leaved kind, if sown early, will soon come into use, and the prickly-leaved and Flanders, if sown twice during this month and once early in September, will furnish a supply late in the season, and also in spring.

Turnips and Radishes.—Thin young Turnips a little, and pull for market such roots of the other plantations as are most advanced, leaving the smaller Turnips to grow a little. Radishes, if sown in cool shady places last month will now be fit for use, and from sowings made now and in September fine, sweet, crisp roots will be obtained.

Tomatoes.—Towards the middle of the month these will be at their best, as regards quantity of fruit, but it will be towards the end of the month before the ripe fruit can be seen to advantage. As soon as any of the fruits begin to colour, prune in the leaves and laterals pretty closely, so as to freely expose the fruits to bright sunshine. Some growers prefer allowing them to colour and to fully ripen on the plants; others, on the other hand, gather them immediately they begin to colour, and place them on a layer of straw, near the glass, under sashes in frames; under such conditions, they ripen pretty well, and by removing them early from the plants, the remaining fruits have a better chance to swell and ripen. It is an acknowledged fact that Tomatoes, after they once show colour, never swell any more; consequently their removal from the plants at that stage is not attended with any loss as regards weight of crop.

Vegetable Marrows.—This crop is now at its best, and some of the most vigorous shoots will require attention as regards pegging down, or placing bits of bricks or stones on them to keep them down and cause them to root. In dry weather, water them abundantly, so as to keep them in vigorous health and to prevent the attacks of mildew. Do not allow the fruit to become too old before it is gathered.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

AUGUST 20TH.

GLADIOLI. Hollyhocks, Phloxes, and a few miscellaneous plants formed the more important subjects of exhibition on this occasion. Gladioli, especially, were extremely fine, the spikes being large and well furnished with good blooms of brilliant colours. In the class of twenty-four cut spikes, Messrs. Kelway & Sons, Langport, were first; Mr. J. Douglas, Loxford Hall, second, and Mr. G. Wheeler, Warminster, Wilts., third. In the class of a dozen spikes the Rev. H. H. Dombrian was first, Mr. Douglas, second, and the Rev. Lord Hawke, Willingham, Gainsborough, third. His Lordship was first for half a dozen, Mr. Dombrian second, and Mr. Douglas third. Among red-coloured varieties the finest were Horace Vernet, Rossini, Ball of Fire (very fine), President Thiers, Meyerbeer, William Early, Mons. Legouv , and James Veitch; amongst pink or pale salmon-coloured ones, Caroline, Rachel, Queen Rose, Clara, and Adolphe Brogniart were very fine. The flaked or striped sorts were very beautiful, particularly Armide, Jupiter, Octavia, Lubbe, Ariane, Porsena, Prince Arthur, and several unnamed seedlings.

Hollyhocks.—These were excellent in quality, the flowers being large, very double, and of fine form, pure and distinct in colour. In the amateur's class of a dozen cut blooms, Lord Hawke was first with Conquest, red; Alfred Chater and Octavia, rosy pink; Phryne, blush; Fred. Chater and Willingham Model, yellow; and some seedlings. Mr. Minchin, Hook Norton, Oxon, was second in the same class; and Mr. B. Porter, Syon Lodge, Isleworth, third. In the nurseryman's class of twenty-four blooms, Mr. W. Chater, Saffron Walden, was first with superb blooms. They consisted of Black Knight improved, almost black; Nonpareil, claret; Triumph, Fireking, Alfred Chater, Conquest, Eclipse, Walden King, Bijou, Marion, and Victor, red; Joy and Purity, pink; Jessie Dean, Prince Albert, Electron, and a seedling, yellowish tinged with blush; Fred Chater, Golden Drop, Primrose Gem, and Walden Primrose, yellow; Memorial, Nymph, and Juno, whitish. Mr. G. Wheeler, Warminster, was second, with fine blooms of Victory of Bath and Alba superba, as whites; Mrs. Bruce, pink; Exultans, Royal Albert, Gladiator, and Fallax, as reds; and other good sorts. Mr. H. Minchin was third. In the class of six spikes, Lord Hawke was first with very fine and densely furnished spikes of Midnight, very dark maroon; Talisman, red; Eleanor, pink; Queen of Yellows, yellow; Alba superba, the purest white. Mr. W. Chater was second in this class, and Mr. Minchin third.

Phloxes.—In the class of a dozen spikes of herbaceous kinds, Mr. R. Parker, Tooting, was first with very fine examples of Madame Autin and Madame A. Verschaffelt, dark purple; Aurore boreale, Lothair, Mons. Donneau, rosy-salmon; Princess of Wales, Madame la Comtesse de Tarenne, Souvenir de Fernes, Madame Damage, whitish, with red eyes; Mons. C. Turner, pale rose, red eye; A. F. Barron, violet-rose, dark eye; and Heloise, pure white. Messrs. Downie, Laird, and Laing, Forest Hill, and Mr. T. S. Ware, Tottenham, also showed fine blooms of Phloxes.

Miscellaneous Subjects.—Among these a large and varied collection of showy herbaceous Lobelias was exhibited by Mr. T. S. Ware. Conspicuous amongst them were Dazzle, Comet, Foxhunter, and St. Clair, as scarlets; Purpurea regia, Ringleader, and Marvel, as purples; and Carminata, as a salmon-coloured sort. Mr. Parker was the only exhibitor in the class of twelve hardy perennials, and his plants were wonderfully fine. They consisted of Helianthus orgyalis, a tall plant with graceful foliage; Helianthus rigidus, Rudbeckia Newmanni and speciosa, Helenium coronatum luteum; Phloxes—Madame Bonneau and acuminata; Delphinium Nahamah and Ketelecri, Statice latifolia, Origanum pulchellum, and Molina cœrulea variegata, a pretty variegated Grass. A miscellaneous collection of Dahlia blooms, remarkable for fine form and quality, was exhibited by Mr. C. Turner, Slough; and a stand of Roses came from Mr. Porter, Syon Lodge, Isleworth. Three superb examples of Cockscombs were exhibited by Mr. McLachlan, Glasgow. They were well furnished with strong and healthy leaves, dwarf in habit, and the inflorescence was enormously large, eclipsing anything of the kind that has been exhibited for years. A few branchlets of a variegated-leaved Dahlia were exhibited by Mr. G. Craddock, Compton Verney; and Messrs. Paul & Son, Cheshunt, showed some good seedling Hollyhock flowers. From J. T. Peacock, Esq., Sudbury House, Hammersmith, came two beautiful Cacti in flower—Echinopsis Wilkinsii and Schelhasii; and Mr. J. Fewell, Broad Green, Croydon, sent a fine specimen of Adiantum Farleyense. A basketful of Blumenbachia coronata, lifted from the open ground, and also some specimens of Celosia Huttonii from the open ground, were exhibited by Messrs. Veitch & Sons, Chelsea. This Celosia has a good stubby habit and deep crimson colour, and will, undoubtedly, eventually become a popular bedding plant. A very curious golden Fern, Gynnogramma Alstonii, the ends of the pinnae being all incurved, was shown by Mr. Brown, Glendon Hall, Birmingham; and some nicely coloured Coluses were contributed by Messrs. Downie, Laird, & Laing.

Fruit.—In the class for a dish of Apricots Mr. G. Kirkland, Blechington, Oxford, was first with the Moor Park, Mr. Gardiner, Lower Ealington Park, second, and Mr. Scott, Kidlington, Oxford, third, with the same sort. Mr. Gilbert, of Barchley, also showed two dishes of very fine Apricots, and Mr. Tillery, of Welbeck, some large and heavy fruits of Peaches. From Mr. F. Dancer, Chiswick, came specimens of Cellini, Stirling Castle, Cox's Pomona, and Small's Incomparable Apples, from trees grafted on the Paradise stock. One of the prettiest of early Apples was

sent by Mr. G. Cooling, of Bath. Of this a notice will be found in another column. Mr. Cox, Redleaf, sent some Citron des Carnes Pears, and Mr. Bennet, of Hatfield, showed some white-fleshed Melons, named "Hatfield," a kind medium as to size, yellowish-skinned, and netted. Mr. Gallop, Bradford, Paverell House, Dorchester, showed Bradford seedling Melon, a green-fleshed large-fruited kind, and also a variety called Improved Golden Queen. Some very fine Cucumbers, named Munro's Improved Rabby, with no "necks," and about a foot long, were exhibited by Messrs. Munro, Potters Bar; and a dish of the New Zealand runner Beans from Mr. J. Drewett, Denbees, with very long pods.

First-class Certificates.—These were awarded to the following:—Protee, Mrs. Lord (Lord), a pretty white flower, suffused on the edges with rose.

Hollyhock, Vanguard (Lord Hawke), a very fine kind, with extraordinarily large flowers of a claret colour.

Hollyhock, Fire King (Chater), very double, large, and red.

Hollyhock, Mr. W. Chater (Chater), splendid blush flower.

Hollyhock Lilac Queen (Lord Hawke), a beautiful distinctly-coloured lilac sort.

Gladiolus Captain Stuckey (Kelway), red marbled on edge with violet; fine flower.

Gladiolus Scopus (Kelway), a fine white flowered sort with violet throat; flowers very large.

Gladiolus Hesperia (Kelway), a brilliant scarlet, suffused with violet in throat; a very fine flower.

Gladiolus Neogenes (Kelway), rosy-lilac, marbled on edges of flowers with red; very fine large flowers.

Gladiolus Mary Kinnear (Douglas).

Gladiolus purpureus auratus (Bull), a pretty yellow-flowered species, with purplish-violet blotches in the throat.

Verbena, Paradise, Williams' (Eckford), a good red, with a large yellowish white eye.

Verbena, Her Majesty (Eckford), a large-flowered rose-coloured sort, with red eye.

Begonia, Prince of Wales (E. G. Henderson), an extremely fine, deep scarlet-flowered hybrid, with good habit.

Begonia, Prince Teck (E. G. Henderson), a fine double-flowered carmine-coloured sort.

Aster tanacetifolius (Veitch), a pretty blue-flowered plant, with deeply-cut leaves.

The Forthcoming Fruit Show at Manchester.—I am sorry to have fallen into a little error in my notice of the above (see p. 103). The subscription list, it appears, is over £1,400, in addition to £400 voted by the Council of the Botanical and Horticultural Society; so that the promoters of the subscriptions are entitled to a larger share of credit than I gave them. Further, it appears that there is a distinct Exhibition Committee, constituted of six of the Council and six of the Prize Fund Committee, assisted by the curator of the gardens. These thirteen gentlemen have for a considerable time held weekly meetings.—LEO GRINDON.

Death from Eating Fungi.—Death occurred the other day at Acton from eating what were supposed to be Mushrooms. It appeared that the Fungi were given to the deceased, who was a domestic servant, by a gardener named Thomas Hunt, and that the deceased and two other persons partook of them. They all became ill, and a medical man was called in. The others recovered; but deceased died in great agony the same night. Hunt said he ate some of the Fungi himself from the same gathering.

COVENT GARDEN MARKET.

AUGUST 22ND.

Flowers.—Plants in pots consist chiefly of Pelargoniums, Cockscombs and other Celosias, Asters, Gladioli, Oleanders, Japan Lilies, Fuchsias, yellow Calceolarias, Petunias, and a few ornamental-leaved Dracanas, Crotons, Palms, Ferns, little Conifers, Myrtles, and other evergreen shrubs. One of the prettiest of flowering plants in the market at present is Hydrangea paniculata grandiflora, the white frothy-like flowers of which are produced in great abundance and contrast admirably with the brilliant scarlet blossoms of Vallota purpurea, fine plants of which are also coming largely into market. Of cut flowers, both from out and indoors, there is a good supply; and it is astonishing to see in the market at this season such quantities of Fern roots as are to be seen in it daily. Of fruit, both home and foreign, there is a good supply.

Prices of Fruits.—Apples, per doz., 6d. to 1s.; Apricots, 2s. to 4s. per doz.; Cherries, per lb., 6d. to 1s. 6d.; Chillies, per 100, 2s.; Currants, persieve, 3s. 6d. to 6s.; Figs, per doz., 2s. to 4s.; Gooseberries, per quart, 3d. to 6d.; Grapes, hot-house, black, per lb., 1s. 6d. to 5s.; Muscats, 2s. to 6s.; Lemons, per 100, 8s. to 14s.; Melons, each, 2s. to 6s.; Nectarines, per doz., 6s. to 10s.; Oranges, per 100, 12s. to 24s.; Peaches, per doz., 10s. to 20s.; Pears, per doz., 2s. to 4s.; Pine Apples, per lb., 3s. to 6s.; Raspberries, per lb., 4d. to 1s.; Tomatoes, per doz., 1s. to 2s.; Walnuts, per bushel, 12s. to 20s.; ditto, per 100, 1s. to 1s. 6d.

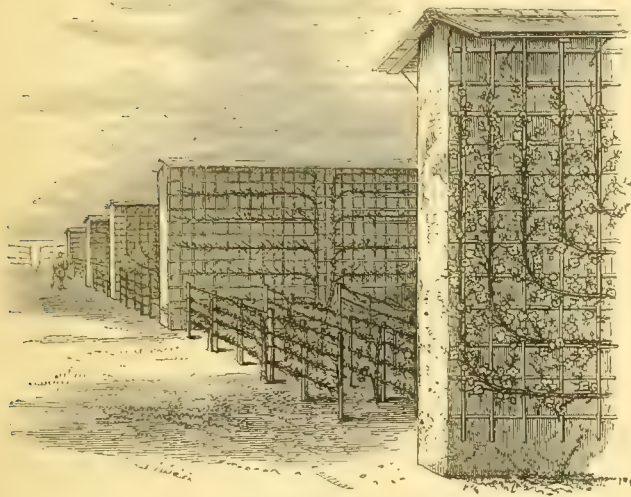
Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 3s. to 6s.; Beans, Kidney, per half sieve, 2s. to 3s.; Beet, Red, per doz., 1s. to 2s.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 8d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 4s.; Cucumbers, each, 3d. to 6d.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horse-radish, per bundle, 3s. to 4s.; Leeks, per bunch, 1d.; Lettuces, per doz., 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 4s. to 6s.; button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 8d. to 1s.; Peas, per quart, 9d. to 1s.; Potatoes, per bushel, 3s. 6d. to 5s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsify, 4d. to 1s. 6d.; Scorzoneria, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, 4d. to 8d.; Vegetable Marrows, per doz., 1s. to 2s.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

PEACH GROWING AT MONTREUIL.

ALL visitors to Paris at all interested in fruit culture should visit Montreuil, and I venture to assert that, if they do so at the present time, they will not be disappointed. Here are acres of Peach grounds cut into narrow strips by white-washed walls of stone, 9 to 10 feet high, while the trees themselves in the best gardens are as perfect in shape, vigour, and fruitfulness as it is possible for them to be. Some may suppose that a genial climate is one of the causes of success, but I can scarcely put so much stress on that point as on the thoroughly practical way in which fruit tree culture is managed in France. The weather possessed by these cultivators is certainly very bright, and that frequently for months together during the summer and autumn; but their winters are wet and cold, and their spring frosts quite as destructive to unprotected blossoms as are our own. At Montreuil the little gardens are fully exposed on a sloping hill side, but the trees are protected to a great extent by the transverse



A Peach Garden at Montreuil.

walls by which each strip is divided into sheltered compartments; and, in addition to this, great care is taken to protect the trees from rain and drip by the use of neat straw, reed, or light wooden frames about 2 feet wide. These frames are supported on old spokes of wheels placed beneath the plaster copings, and about a yard apart. These are secured firmly in their places by thick string tied round the knuckle-bones of sheep driven into the plaster about two feet below the frames. One fact is obvious enough to all who visit Montreuil—namely, that great care is taken to protect the trees during inclement weather, much more than is usually done with our own outdoor trees at home; and this, I cannot help thinking, is one of the great secrets of success. Another thing equally noticeable is the extreme regularity of the trees, no one branch being allowed to monopolise more than its due share of sap, or grow an inch in excess of its fellows. Indeed the precision with which the tree is balanced by summer pinching and judicious training is another point worth the attention of our best fruit growers. Should any shoot evince a tendency to grossness, its vital force is at once reduced by removing portions of its leaves, and thus reducing the wood-producing capabilities of that particular portion of the tree. On the other hand, if any shoot is inclined to remain weaker than the rest, it is at once unnailed, and trained away from the wall in an erect position so as to allow the sap full play, while its vigorous action is further augmented by full exposure to

light and air. The growers at Montreuil look on the cultivation of Peaches from a commercial point of view, and go into the minutiae of the science of fruit tree culture with that vigorous zest which is almost invariably the forerunner of success. All their time, intelligence, and, in many cases, a life-long experience, are brought to bear on the best and surest way of obtaining fine crops, while preserving the trees in a healthy state. Most of the trees are nailed to the plastered walls, though in some cases neat wooden trellises are employed with good results. Our illustration gives an excellent idea of a Peach garden, and also shows the usual method of training the trees. The walls are about a foot or 15 inches thick, built of rough stones found in the immediate vicinity. These are covered with a coat of cement about an inch and a half thick, so as to hold the nails. These walls, being white-washed, are snowy white, and show off the fresh green foliage and richly-coloured luscious fruits to the best advantage. Some idea of the number of fruit borne on a single tree may be inferred from the fact that I counted four dozen fine Peaches on a single horizontal branch, and the tree had ten or twelve branches bearing from two to four dozen each. I have often met with fruitful trees, but, with the exception of the noble old tree (under glass) at Chatsworth, I never saw such a quantity of fine fruit before in such a limited space. Several of Mr. Rivers's new seedlings, including Early Beatrice and Early Rivers, are doing well grafted on Grosse Mignonne (Hâtive), which is one of the most prolific and best of all Peaches for market work. It is a noticeable fact here that Peaches of the same variety, grown under otherwise equal conditions, are a week or ten days earlier on the Plum stock than when grafted on the Almond; hence the Plum stock should be used for the early varieties in preference to any other. Under portions of several trees I noticed sheets of brown paper coloured black, and these are said to attract sufficient heat for insuring ripeness eight or ten days sooner than under ordinary circumstances. The French cultivators are also very careful to protect the exposed parts of the principal stems from the hot sun, and for this purpose small bits of board are set against the lower part of the stem, while the horizontal branches are enveloped in thick felt or canvas. On my remarking that every branch had produced its laterals with mathematical regularity, I was shown that such had not always been the case, a shoot being inarched at intervals, so as to supply the omissions in the shortest possible time. In addition to the large fruit-bearing specimens, I was shown quantities of fine fresh healthy young trees trained on a couple of planks or boards placed horizontally, one above the other; and it is interesting to note the care taken to start these trees regularly and equally at first. One tree here had been watered with sulphate of iron for the "yellows," and at the time of our visit looked fresh and healthy. The Peach season here lasts from the first day of July to the middle or latter end of October, or nearly four months, the supply commencing with Early Beatrice, which is followed in a few days by Early Louise and Early Rivers. Only three or four varieties are grown for the full crop, and these consist of Grosse Mignonne (Hâtive), Bellegarde (Galande), Belle Bauce, and Bon Ouvrier. I have to thank M. Gustave Chevalier for a list of the kinds grown here for variety, and which are given below in their natural order of ripening:—

PEACHES.—Early Beatrice, Early Rivers, Early Grosse Mignonne, Belle de Vitry, Belle de Doué, Bellegarde (Galande), Noire de Montreuil, Pêche de Pradon, Madeleine de Courson, Madeleine Rouge, Comtesse de Montjot, Belle Bauce, Pêche de Wurtemberg, Belle Impériale, Reine des Vergers, Bon Ouvrier, Gros Chevalier Tardive, Bourdon, Téton de Venus, Salway, Admirable Jaune, Impératrice Eugénie, Origine du Lot, Gustave Chevalier (fine), Sanguine, Walburton Admirable, Pacha d'Egypt, Princess of Wales, and Prince of Wales.

NECTARINES.—Brugnion, Violette Hâtive, Violette Blanche, Pitmaston Orange, Victoria, Stanwick, and Bowdon.

During the past season M. Rivière has given, in the above grounds, a course of instruction in arboriculture as applied to fruit trees; and I cannot help regretting that such institutions are less popular with us than with our neighbours across the Channel.

F. W. BURBIDGE.

NOTES OF THE WEEK.

— In the cottage gardens of Devonshire, Fuchsias (not only the old Riccarti, but many of the more recent and white-coralled varieties) form a very interesting feature now. We need scarcely say that there are many nooks and corners south of the Trent where similar pretty additions to such gardens might be had.

— MR. WILSON informs us that at Heatherbank, Weybridge Heath, he has a fine specimen of *Lilium tigrinum splendens* now in bloom. It has three stems from one bulb, bearing respectively twenty-six, twenty-two, and eighteen blooms. Its height, including the pot, is 8 feet 10 inches, and the spread of the flowers on one flowering-stem is 22 inches.

— The fruiting of *Wistaria sinensis* in this country is a somewhat novel occurrence. It is now bearing numerous seed-pods in the central arcade of Messrs. Pince's Italian Garden, the roof of which is mainly covered with this favourite hardy wall plant. The pods are in various stages of growth, some being several inches long, though still quite green, the beans being apparently fully formed.

— A PARK at the west end of Newcastle was opened to the public on Tuesday last. It has been purchased at a cost of £23,000 by Mr. Joseph Cowen, jun., and four other members of the Town Council, but it is expected that the place will ultimately be taken off their hands by the Corporation. It was originally known as the Elswick Hall Estate, and had to be hastily purchased to save it from being turned into building ground.

— ABOUT twenty plans for laying-out Roundhay Park have been received in Leeds by the Town Council, in competition for the premiums offered for the best designs. The *Yorkshire Post* believes that it is the intention of the Corporate Property Committee, after examining them, to throw them open to the inspection of the rate-payers. They will be arranged in one of the apartments of the Town Hall, at the conclusion of the Assizes.

— WE understand that the Government of Victoria, South Australia, is about to appoint a Royal Commission to practically investigate the diseases to which the Vine is liable in that Colony, and the remedies for such diseases. The diseases of fruit generally will also come under the notice of the commissioners, and in order that some useful result may be arrived at, not only Vine growers but horticulturists generally, are invited to take part in the undertaking.

— GREEN Tea as imported is considered by the English courts as an adulterated article, and a grocer of Liverpool was recently fined for selling it. The Tea was shown by chemical analysis to be coloured with Prussian blue and mineral matter, but experts in the trade proved that it was genuine green Tea as imported from China. The *British Trade Journal* admits that this Tea is adulterated, and that the importation of green Tea into England will be virtually stopped.

— A CURIOUS contribution to the literature of that excellent but dolorous root, the Onion, comes from a little French village. The inhabitants of this place regularly perform a ceremony without which they hold the general well-being of the said vegetable could not be secured. This ceremony consists in the gorgeously-attired people of the village dancing in a circle, holding bands, and is said not only to make the Onion healthy, but to impart to it a fascinating roundness and perfection of form. The festival continues eight days, and is accounted generally pleasant and profitable.

— BEARING out Mr. Simpson's remarks (see p. 182) on keeping fruit by the aid of ice, we find the following in the last issue of the *N.Y. Tribune*:—"Christopher Shearer, owner of a fine estate in Pennsylvania, has 1,500 Apple and Pear trees, a portion of the crop from which he preserves in a refrigerator, 55 feet square, and holding, when filled, about 140 cart-loads of ice and 4,000 bushels of fruit. Last fall he stored in it 1,800 bushels of Apples, mostly Baldwin's, Greening's, and Pound's, and 450 bushels of Bartlett, and 50 bushels of Lawrence Pears. This stock kept well till late this spring, when it was sold for good prices."

— WE have received from Mr. Mongredien a flowering branch of *Carolea insignis*, a Sterculiaceae plant, or rather small tree, which is now in blossom in his hothouses at Forest Hill. Mr. Mongredien states that there has been, and is still (August 21) quite a profusion of blossoms on his plant, which is eighteen years of age. It is a tree which grows to 30 feet in height at least, and is a native of the West Indies. It has digitate leaves something like those of a Horse Chestnut, but with the leaflets more leathery in texture. The flowers which rise from the axils of the leaves, are of a creamy-white colour. The calyx is cup-shaped entire, the petals strap-shaped, and covered internally with a soft white down. The stamens are very numerous with their filaments united into a ring at the base, but divided upwards into many branching bundles, and these being of a bright

orange colour add greatly to the beauty of the flowers which are as fragrant as those of a Magnolia. Mr. Mongredien is of opinion that age must be acquired before the tree gets into a blooming habit.

— DURING the heat of the present summer a fire broke out in the Cork-tree forest of M. Sila, near Oran, bordering on the Plaine des Andalouses. The conflagration lasted for several days, and destroyed about 3,750 acres of timber.

— LAST week a garden party was held by spiritualists at the People's Garden, Willesden, at which, with the exception of a lecture on legerdemain, delivered by one of the body, the proceedings and entertainments were of the ordinary material kind.

— SOME magnificent blooms of double Zinnias, each as large as a small Dahlia, and of different colours of the most brilliant description, have been shown to us by Messrs. Stuart and Co., of Tavistock Row, Covent Garden. They were, we believe, grown at Nice from seed in the possession of this firm.

— THE ravages of the Phylloxera still continue to claim the attention of the Académie des Sciences. At the Séance of July 21 four communications were read on the natural history of the insect, and on the employment of the water of ammonia and other matters to destroy it on the Vines.

— MR. PETER HENDERSON says that the wages of gardeners in the vicinity of New York City are as follows:—Single men, £5 to £12 per month and board; married men, £7 to £14, with house to live in—average of the former £8 and board, and the latter £10 and house. The more extended and important the charge the higher the wages.

— ONE fact of importance was noticeable after the drenching thunder storm of last Sunday evening, viz., that many of the Zonal Pelargoniums, and other flowering plants in the parks, presented a miserable appearance, while the carpet-beds of *Alternanthera*, *Golden Pyrethrum*, and succulents were but little the worse; indeed in some cases the rain had, if possible, brightened them up.

— THE library of natural history collection, the property of Mr. W. Wilson Saunders, F.R.S., treasurer and vice-president of the Linnæan Society, was sold by auction a few days ago by Messrs. Sotheby, Wilkinson, and Hodge. The collection comprised most of the valuable works on botany and entomology, both English and foreign, and realised £2,041.

— THE Abyssinian Banana (*Musa Ensete*) has this year, for the first time, produced and matured its fruit in the open air in the Botanic Garden at Palermo. The flowers began to appear in the spring of 1872, and continued to be produced without intermission, all through last winter. The flower-spike was over 6½ feet in length, and the number of fruits which were perfectly matured amounted to twelve. The seeds of these were sown under glass in a high temperature and have germinated in the most satisfactory manner.

— THE Camellia house at Messrs. Pince's, Exeter, which may be described as four walls covered by a glass roof, had fallen out of repair; it has now been repaired, the walls raised 4 feet, a new roof put on, and the plants, which were growing through the glass, have thus more scope for their pent-up energy. These plants are of the largest size, and in the season produce flowers in thousands. The walls of the house are literally covered with foliage, and the centre bush plants are upwards of 20 feet in height. The only artificial heat they get is while they are making their season's growth.

— WE have received from Mr. Thompson, of Ipswich, specimens of *Pentstemon Palmeri*, of Gray, a very distinct new kind, remarkable for its short inflated corolla and long lobes of the lower lip. Only side branches and flower-spikes have reached us; but Mr. Thompson informs us that the inflorescence, which is of a delicate peach colour, occupies quite 2 feet in length of the main stem. It comes from Arizona, and probably also occurs in other Western American states. The foliage, which on the flower-stems is connate, is of a glaucous hue, and petiolate on the side branches. It is evidently a robust-growing plant, reaching, when in flower, to a very considerable height; therefore, when the large number of flowers it produces is taken into account, it cannot fail to be a showy plant, either in the herbaceous garden or shrubbery border.

— WE learn that an entire change is to be made in the management of the Melbourne Botanic Gardens. For the future Mr. Hodgkinson will have the chief charge of the whole of the parks and public gardens round Melbourne, with the title of inspector-general. Baron von Mueller will cease to have anything to do with the botanical gardens, although, of course, any experiments he may desire to make in the way of acclimatisation or otherwise will be carried out at his request. He is to be appointed Government botanist, and Government botanical lecturer at the university. His present salary is £610 per annum. This will be increased to £800, and there will be an allowance of £300 per annum for an amanuensis and for the cost of collecting new plants. By this alteration the Government domain and the botanic gardens will all come under one management, and a very considerable saving will be effected.

THE ARBORETUM.

REMARKABLE TREES AT ABERGELE.

It is important that the localities of trees, both cultivated and wild, or apparently wild, that are in every way conspicuous for their age, dimensions, physiognomy, general habit, or any special quality, should be made known in the columns of THE GARDEN. Only by such means can people be made thoroughly aware of the marvellous richness of our island in glorious trees, and it may serve no slight purpose of utility by enabling one's brother tree-lovers, when taken by business, or led in search of new enjoyment, to distant parts of the country, to know what awaits them. Here, at Abergele, for instance, half a-mile from where I write, there stands, on the edge of a meadow close to the wayside, an ancient Willow—a genuine example of the *Salix vitellina* of Smith, the *alba* var. *vitellina* of all recent authors, massive below, greatly bent with old age, and the upper portion hanging far away from the sturdy trunk, almost like a *Babylonica*. In this, perhaps, there is nothing unusual. Very remarkable, however, is the tree in question, in having its long, lithe, pendulous shoots and twigs

all of a delicate amber-yellow; so that, when the whole has been recently moistened by rain, and the sunshine is falling upon it, the tender and satiny green seems inlaid in every part with filaments of gold. I do not know that the comparison is apt; but this beautiful tree reminds me, every time I pass, of the way that I have seen the auburn tresses of many a pretty little girl of eight years old or so, laced, as it were, with threads of the self-same sunshine. Could it be removed bodily to the margin of an ornamental piece of water, or to the banks of a lake or stream, in some nobleman's park, this Willow would be simply invaluable. Yet, so far as I can detect, from watching the wayfarers who go past, it seems scarcely ever to attract attention. The old, old story, "Full many a flower is born to blush unseen," might be related anew, it is very evident, of things which, if they do not exactly waste "sweetness" on the "desert air," are clothed, at least, in qualities of singular charm. So with an Oak—a *bonâ fide* British one—hard by. The leaves of this tree are quite equal to the best and largest of those of the "Champion" at Fulham Palace, or as long as one's hand, and, reckoning to the extremity of the lobes, considerably broader. The texture of the leaves is like that of an *Aralia*—the incipient Acorns form great knots. If the Fulham tree be well named "Champion," this one at Abergele I should feel disposed to call "Imperator."

L. G.

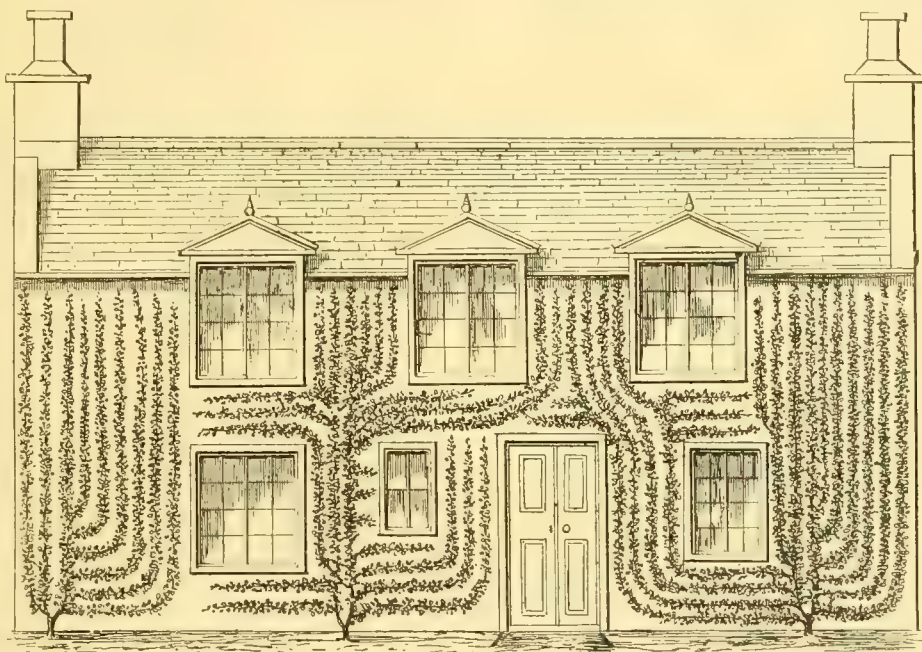
COTONEASTER MICROPHYLLA.

(By JAMES M'NAB, Royal Botanic Gardens, Edinburgh.)

THIS hardy evergreen shrub, which was introduced from Nepaul about fifty years ago, is one of the most accommodating

plants we have in cultivation. If we want permanently to cover a heap of stones, or an elevated piece of bare ground, it is well adapted for such a purpose. If we wish to clothe a piece of unsightly wall, no plant is better suited for doing so than this *Cotoneaster*, as it ascends rapidly. If it is our intention to drape the walls of an old turf-topped ruin, plant it along the summit, and its branches will grow downwards. If for a hedge, plant in a row, and support each of the tops till they reach the height of 2, 3, or more feet, and then allow them to hang down. If for a single evergreen shrub, tie several leaders in a cluster to the height wanted, and then allow the tops and side branches to droop. When planted against a wall, say 10 feet in height, it will soon grow to the top, run over it, and down to the ground on the opposite side; if it is intended to cover a portion of rockwork or old outhouse, no evergreen is better suited. Its being such a hardy evergreen, and extremely interesting both in flower and fruit, are also recommendations. During a recent visit to Doune Castle, in Perthshire, I was surprised and pleased to see the house of Mr. Dewar, tenant of the Doune Castle farm, richly adorned with this remarkable shrub. Several plants were placed in front of the house about fourteen years ago, and they now cover the

whole face of it, and are trained in such a way that they fill up every available point. All the branches are kept at uniform distances from each other, their wiry stems being thickly covered with dense clusters of closely-spurred branches and leaves. The annexed illustration will give an idea of the trouble that has been taken for many years to prune these plants; and, although each plant is about 14 or 15 feet in height, owing to the manner in which some of the branches are directed, any



Cottage covered with *Cotoneaster*.

length may be attained. The whole operation of pruning and training is the work of the ladies belonging to Mr. Dewar's family, and I was glad to see that they take such a deep interest in its management. They may well be proud of the results of their labour, as it is certainly a remarkable feat of perseverance and industry. At the time of my visit, one of the young ladies was mounted on a ladder busy clipping off the summer-made shoots, an operation which is done during the month of August every year. The plants were originally nailed to keep them in the position wanted, particularly when in a young state; they afterwards gain strength and adhere firmly to the wall, but are regularly fixed when they get out of order. During the flowering season, the branches are white with blossom, and red during the fruiting time. This flowering and fruiting is greatly induced by the spurring and training to which they are annually subjected. The excessive moisture of last year was the cause of many monstrous shoots being produced on the *Cotoneaster*. In several gardens I observed them of a Cockscomb form, some measuring fully 4 inches in breadth and half an inch in thickness. This plant is readily increased by means of seeds or cuttings. If the plants are growing on

the ground, or on any damp surface, the branches soon get covered with delicate young rootlets. The cuttings, after being removed from the parent plant, have only to be cut into lengths and inserted in the earth, where they will be found to root freely in almost any soil. Owing to the wiry nature of the branches of the Cotoneaster, it is quite possible to train them into the form of letters, cyphers, coronets, or any device that may be wished, either on the ground or on walls, but, where this is done, annual training and clipping are absolutely necessary; portions of the branches may also be bared of the leaves or young twigs, to suit certain forms of arrangement, and no injury will be found to accrue to the plant from such mutilations.



SINGULAR DISCOVERY IN AN OLD OAK.

In the hollow of an old Oak, which was blown down in Miami Valley by the hurricane on the 4th of last July, a human skeleton was discovered, together with some brass buttons, shreds of clothing, a pocket-book, and some papers. The man's name, as gathered from the papers, was Roger Vanderburg, a native of Lancaster, Pennsylvania, and a captain in the revolutionary army. He was an aide to Washington during the retreat across the Jerseys, and served a time in Arnold's head-quarters at West Point. In 1791 he marched with St. Clair against the North-Western Indians, and in the famous outbreak of that general on the Wabash, November 3 of the year just written, he was wounded and captured. But while being conveyed to the Indian town at Upper Piqua he effected his escape, but found himself hard pressed by his savage foes. He saw the hollow in the Oak, and despite a mangled arm, and with the aid of a Beech that grew beside the giant Oak, he gained the haven and dropped therein. Then came a fearful discovery. He had miscalculated the depth of the hollow, and there was no escape. Oh, the story told by the diary of the Oak's despairing prisoner! How, rather than surrender to the torture of the stake, he chose death by starvation! how he wrote his diary in the uncertain light and the snows! Here is one entry in the diary:—"Nov. 10.—Five days without food. When I sleep I dream of luscious fruits and flowing streams. The stars laugh at my misery! It is snowing now. I freeze while I starve."—*Philadelphia Ledger*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Hardy Bignonias.—Kindly tell me if there are other hardy Bignonias besides *B. radicans*.—*DELTA*. [*Bignonia capreolata* is the only hardy species with which we are acquainted, except *radicans* and its varieties, major and superba.]

Variegated Ivies.—Which of the silver variegated Ivies is the best for planting against a house-wall. I want a fast grower and one whose variegation is effective.—*J. H. W. T.* [*Hedera marginata elegantissima*, which is one of the best of the silver variegated kinds, or *H. marginata alba robusta*. All other so-called silver-edged sorts are either cream or straw-coloured.]

Berberidopsis corallina.—Preparation of Soil, &c.—I want to put out against a wall a plant of this that I got recently for that purpose, and I wish to give it fair play and a good start. What kind of soil am I to set it in?—*J. T. P.* [The soil most suitable for *Berberidopsis corallina* is one-half loam, one-fourth peat or leaf-mould, and one-fourth rotten manure, well-drained.]

Magnolia grandiflora.—One of my trees of this is 25 feet in height, the breadth of the branches is 18 feet, and the girth of the trunk at the surface of the ground is 1 foot 11 inches. This tree has fifty flower buds on it. I have another tree 21 feet 4 inches in height, and the spread of its branches is 23 feet, the girth of the trunk is 2 feet, and the number of flower buds on it is sixty-five. The height and breadth of these trees are circumscribed for want of wall space. They are cut back every year, and they have been planted about fifty years.—*FRANCIS WYTHES, Ravensden House, Belford*.

Climbers for Broken Fir Trees.—I have about a dozen Fir trees blown off from 10 to 15 feet from the ground, in quite a thin wood in a large "wild garden." I am anxious to cover them with flowering creepers, and should be much obliged if you would let me know the names of a few strong-growing climbing plants that would be likely to suit. I should plant them in the autumn.—*B.* [*Clematis montana grandiflora*, *C. Jackmani*, common Honey-suckle, common Jasmine, *Jasminum nudiflorum*, Virginian Creeper, various kinds of Ivy, *Aristolochia Sipho*, *Rubus biflorus*, *Wistaria*, and some of the hardy American Vines.—*Ed.*]

Kolreuteria paniculata.—A fine specimen of this grows on a gentleman's lawn at Stivichall; it is a most rapid growing tree, and the roots run a long way, if one may judge from the suckers thrown up. The butt or trunk of this tree runs 9 feet high, and then breaks into four large branches; it has an average girth of 6 feet; the four branches run up from 8 to 10 feet, and then throw out smaller branches which form a very handsome top. Fifteen years ago the tree did not girth more than 2 feet 6 inches.—*H. M. J., Coventry*.

THE FLOWER GARDEN.

MIXED BORDERS.

I wish to make a border of mixed hardy plants, which shall be such an improvement on those generally seen as to defy the criticism of the most enthusiastic bedder out. To do this I only wish to use plants of neat and compact growth, of the first order of beauty as regards their flowers or foliage, and to have as much variety as possible. They must be arranged according to colour, times of flowering, and height; and I find it almost impossible to get any good spring bloomers for the back row, or autumn flowerers for the front. All annuals, half-hardy plants, and strictly rock plants, should be excluded; and though a few bulbs, such as Narcissi and Hyacinths might be put in by the side of those which flower late, yet I wish, as far as possible, to restrict the catalogue to herbaceous plants. Can any of your correspondents suggest any improvements in arrangement, or tell me of any better plants than those enumerated in the following list. Will my border be too crowded?

PLAN FOR A MIXED HERBACEOUS BORDER, 33 FEET LONG, AND 5 FEET WIDE.

Back row.	Height. 2½ to 4 feet.	Middle row.	Height. 1 to 2½ feet.	Front row.	Height. 3 in. to 1 foot.
1. Phlox, herbaceous; white; autumn.	2. Iris sambucina or ochroleuca.	3. Epilobium roseum superbum.	4. Dielytra spectabilis; pink; spring.	5. Lilium candidum; white; summer.	6. Anemone japonica; pink; autumn.
7. Statice latifolia; blue; autumn.	8. Iris Victorine; blue and white; summer.	9. Dictamnus albus; white; summer.	10. Lilium chalcedonicum; scarlet; summer.	11. Spiraea japonica; white; summer.	12. Iris germanica; orange and purple.
13. Phlox, herbaceous; purple; autumn.	14. Anemone japonica; white; autumn.	15. Tricyrtis hirta; autumn.	16. Campanula Van Houttei; blue; summer.	17. Lilium candidum.	18. Dictamnus Fraxinella; purple; summer.
19. Primula japonica; crimson; summer.	20. Funkia Fortunei; fol. var.; summer.	21. Trollius asiaticus; yellow; summer.	22. Lilium longiflorum; white; summer.	23. Epimedium pinna-tum elegans; foliage.	24. Dodecatheon Meadia elegans; pink; spring.
25. Aquilegia cerulea; blue and white.	26. Campanula nobilis alba; summer.	27. Lilium Thunbergianum; orange; summer.	28. Dielytra formosa; red; summer.	29. Anthericum Liliago; white; spring.	30. Aquilegia glandulosa; purple and white; spring.
31. Delphinium Belladonna; blue; summer.	32. Primula denticulata; violet; spring.	33. Aquilegia arctica; rose-yellow; spring.	34. Pentstemon pubescens; purple; summer.	35. Funkia; white-striped fol.	36. Spiraea palmata; crimson; summer.
37. Lilium longiflorum; white; summer.	38. Potentilla; crimson; summer.	39. Polygonatum multiflorum; foliage.	40. Delphinium alopecuroides; blue; summer.	41. Hepatica triloba; red; spring.	42. Linum campanulatum; yellow; summer.
43. Gentiana acaulis; blue; spring.	44. Dianthus corsicus; white; summer.	45. Iris pumila; yellow; spring.	46. Campanula pulla; blue; summer.	47. Primula acaulis; red; spring.	48. Phlox Nelsoni; white; summer.
49. Myosotis dissitiflora; blue; spring.	50. Iris pumila; yellow; spring.	51. Bellis aeneobefolia; red; summer.	52. Aubrietia Campbellii; purple; variegated leaf.	53. Dianthus arenarius; white; summer.	54. Hepatica triloba; blue; spring.
55. Primula acaulis; red; spring.	56. Linum flavum; yellow; summer.	57. Anemone apennina; blue; spring.	58. Thymus citriodorus; gold; variegated.	59. Omphalodes verna; blue; spring.	60. Bellis aeneobefolia.
61. Iris pumila; purple; spring.	62. Phlox subulata; pink.	63. Primula acaulis; yellow.	64. Dianthus Marie Paré; white; summer.	65. Gentiana acaulis; blue.	66. Alyssum saxatile; yellow; spring.
67. Hepatica; blue.	68. Primula auricula; maroon.	69. Aubrietia græca; purple.	70. Thymus citriodorus; gold; var.	71. Iris pumila.	72. Myosotis dissitiflora.

A SUBSCRIBER.

THE ROSE HARVEST.

I HAVE just read "D. T. F.'s" article on Roses in your last issue (see p. 124). I presume his remarks on Maréchal Niel, at least under open-air cultivation, are somewhat exaggerated. I fear it is very rare to find the Maréchal so very grateful as to favour us with his flowers on a south wall "early in May," even in the most sheltered locality. Mr. F. says that "the sun takes the substance, colour, and even the fragrance, out of this glorious Rose." Then how is it that we can never get a perfect specimen of it except from the conservatory, greenhouse, or other structure, in which it can have both sun, shelter, and warmth? We might as well say the sun deteriorates the qualities of the Persian Yellow Rose in its native country. Of course, everybody

who knows yellow Roses, and Maréchal Niel amongst them, will agree with Mr. F. in giving the Maréchal pre-eminence; but I do not see why Mr. F. should, while speaking of yellow Roses, introduce Baroness Rothschild and Marie Baumann, as if to class them both amongst that group, when he says the Maréchal is "far the largest, as well as the most glorious, of all yellow Roses, not forgetting even Baroness Rothschild or Marie Baumann!" Indeed, as one of the most beautiful of the class of Roses to which she belongs, the Baroness well deserves a low bow, as Mr. F. says he wishes to do. But let him no longer confound her among yellow Roses, nor accuse the fair lady of being so bashful as not to "stand up; but, on the contrary, to almost sit, among the leaves and branches." She does no such thing, but just the very opposite. She elevates herself in stately grandeur above her surrounding foliage, on a foot-stalk some 2 or 3 inches high, and thicker, I think, than that of any other Rose in cultivation. I have often wondered, since the Baroness's appearance amongst us, why she had not been classed among the warriors rather than otherwise. But I suppose her nomenclators were influenced by her delicate blush, which is indeed most beautifully bright, rather than that robust quality which would suggest the name of some great warrior. So far from being a yellow Rose, as any one who was not conversant with Roses might conclude on reading Mr. F.'s paragraph, Marie Baumann is a bright crimson. She is, indeed, most beautiful, but rather bashful, as she droops her head as if ashamed to look at us.

Farther on, Mr. F. classes the pale yellow Rose, Celine Forestier, with the yellow Safrano and others, which is a mistake. I would now add that I always found this about the best time in the year to propagate Roses by means of cuttings. Last year I propagated some dozens of different varieties and they were the chief ornaments of the place during the spring, as most of them then flowered very nicely. They are all now very beautiful healthy plants, some in 6-inch pots, others in sizes larger, according to the robustness of the variety. I have this year made three successive batches of Rose cuttings, during the months of May, June, and July, all with more or less success. I have rarely lost more than three plants out of a dozen. After I have dressed the succulent cutting in the usual way, I plant in 3-inch pots filled with soil, two parts silver sand to one part fresh loam; I then plunge in a moderately brisk hot-bed, keeping close for about a fortnight, of course shading from the hot sun, and, proceeding thus, I have no doubt of success.

MICHAEL BARRY.

Mount Callan, Ennis.

THE CAMELLIA IN JAPAN.

FROM the *Cultivateur de la Région Lyonnaise* we translate the following extract of a letter from M. Léon Sisley:—"The only Camellia which I have as yet met with in a wild state in Japan is a red-flowered kind. It is very abundant, and is found almost everywhere growing among other shrubs, and notably in the shade of great trees. It grows very slowly, but attains a large size, some specimens having a stem as thick as a man's body and from 26 to over 30 feet in height. The proper season of flowering begins in April, but blossoms are frequently seen in autumn and sometimes in winter. Seeds are very freely produced, and are gathered by the Japanese in October. They extract an oil from them which is used for various purposes and commands a tolerably high price. What appears to me remarkable in this Camellia is that last winter it withstood uninjured three consecutive months of frost which at times fell as low as 20° or 21° Fahr., while in the day time the thermometer seldom stood above zero. The summer here is rather wet, and the trees never suffer from prolonged drought, which probably are favourable conditions. It would be useful to make a trial in Europe of the hardiness of this shrub which I think should prove quite hardy in France, at least in ordinary winters. Even if the flowering were injured by frost we should have an ornamental shrub worthy to rank with the finest of our hardy evergreens. The Japanese have obtained from this species a number of fine varieties with double flowers of various shades. These are propagated by grafting, and in gardens preserve the hardy character of the parent stock, having passed through the last severe winter uninjured. I do not know whether the Camellias cultivated in Europe have originated from the same source, but those which are grown here appear to me in every respect identical with them."

RAISING SEEDLING ROSES.

YOUR correspondent, "W. M." (see p. 156), tells us how Roses are raised in France, an operation which seems to be a troublesome one, requiring, as it appears to do, a conservatory or a cool house in which to winter them. Such, however, is by no means necessary. My plan is much more simple. At the end of October or the beginning of November, I gather the seeds—small and large—dry

them, and put them away till the first week in March, when a piece of ground is prepared, and the seed is sown. About the middle of July they are in bloom. When the seedlings appear, they should have frequent waterings from a fine-rose water-pot. They remain in the seed-bed till the end of October, when they are taken up and re-planted under a south wall. When the severe weather comes, I merely put a few sticks against the wall and some dry litter on them. I quite agree with M. Bossin in keeping the seedlings two or three years; some of them flower very thin the first year, but the second year they are much better.

WILLIAM ROLES.

St. Michael's Cemetery, Bath.

[Mr. Roles appears to have quite overlooked the fact that M. Bossin says, "Sowings may also be made in the open air in the following manner," which he proceeds to describe, and which does not seem to differ materially from Mr. Roles's plan, the watering and other ordinarily necessary attention being understood. M. Bossin has evidently found that autumn sowing, even if it is a little more "troublesome" to place the seed-pans in a conservatory or cool house, produces the most satisfactory results, and he therefore enters more particularly into the details of the plan which, in his experience, has answered best.]

Tropæolum peregrinum.—May I ask why this common useful little climber has lost its own right name, and obtained the cockney-fied nickname of *Tropæolum canariense*, from a fanciful likeness to a canary bird. This name would imply that it was a native of the Canary Islands, which it certainly is not, and this is, in a botanical sense, utterly misleading, and ought to be checked, at any rate by those who ought to know better; but I see in your last number one of the gardening authorities, Mr. James Morrison, writes of *Tropæolum canariense* quite as if it was the true name. This, of course, a very slight matter, but it is a pity that a trivial name should so entirely override the real name of a true species (not merely a garden variety) and wholly mislead as to its habitat and history.

—AN OLD SOLDIER.

Milla (Triteleia) uniflora.—Your correspondent J. T. P. (see page 130) has I think failed to bloom this plant, simply because it dislikes to be disturbed. If he keeps his pots as they are they will probably flower well in the coming spring. When I have taken up my roots of this for division, I have never known them to bloom well the first season after re-planting. It should be known that the variety of this plant commonly met with is that termed *conspicua*, with broad over-lapping divisions to the flower, which is almost white. The typical *Triteleia uniflora* has narrower segments, more deeply tinged with violet, and narrower foliage. It is to be met with occasionally under the pseudonym of *Leucocoryne alliacea*, though perfectly distinct from the real plant of that name. The name *Triteleia* should be dropped, *Milla*, the genus under which *M. uniflora* was originally published by Dr. Graham, being now adopted in preference.—W. THOMPSON, Ipswich.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Calandrinia nitida.—This is an effective plant, at this time of year, for a warm dry herbaceous border. It is of succulent habit, having thick glaucous leaves, and bright purple flowers borne on stems about a foot in height.—A. F.

Acanthus.—Two or three species of *Acanthus* are now in flower, and are very effective. Planted in strong loam and manure, these plants develop themselves and assume grand proportions, producing elegantly cut massive foliage of a deep shining green colour, and stately flower-spikes 3 to 5 feet high. The flowers are generally white, but the thick leathery bracts are of a delicate purple tint and very ornamental.—B.

Summer-flowering Anemones.—Two or three species of these are now bearing flowers in the herbaceous department at Kew. *A. vitifolia* forms a dense tuft of palmate foliage of a dark green colour, and bears white flowers on stalks 2 feet high. The whole plant has a velvety appearance, and somewhat resembles the autumn-flowering *A. japonica alba*. Another variety, *A. hybrida*, of rather dwarfer habit, is bearing pale rosy flowers. Both plants resemble the Japanese Windflower, but they flower a few weeks earlier.—T. W.

Lilium longiflorum and eximium.—Mr. Barr (see p. 110) asks for help as regards *L. longiflorum*, concerning which all I can do is to corroborate M. Van Houtte's assertion that *Lilium eximium* is twice the size of *L. longiflorum*. All the plants which I have grown of it are of that character; so large, indeed, are the blossoms that I used to call them "silver tundishes," and I believe they would hold quite a pint. I have always thought *L. longiflorum* remarkable for its ivory trumpet-like flowers, which stand out at right angles with the stem, a circumstance somewhat unusual in the case of so large a flower.—T. W. WILLIAMS, Ormskirk.

Coccol Fibre.—This is more used at Bitton than I have noticed elsewhere; not only is it employed in the usual ways, but also for raising seedlings without any admixture whatever; and well the seeds enjoy it. Plants for the house are also grown in it without any mixture whatever, and pans or boxes and beds of it are used for a temporary home for plants which come to hand at times when it may be undesirable or inconvenient to plant them out permanently. Placed "in stock," in coccol fibre, they begin to root afresh, and, as this material falls readily from the young rootlets, without injuring them, they are soon in excellent order for transplanting to their final homes.—W. R.

THE FRUIT GARDEN.

THE ORCHARD HOUSE.

By PETER GRIEVE, CULFORD GARDENS.

THERE are few matters connected with practical horticulture which are more interesting to amateur horticulturists than the cultivation of fruit trees under glass. The variable character of our climate renders the use of protection of some sort necessary, to ensure the production of fruit, and the reduction in the cost of glass has given a stimulus to the desire for the erection of structures for this purpose. Doubtless many structures of this sort have been improvised or erected at a very moderate outlay, in which their possessors have contrived not only to grow fruit trees, but also to produce good fruit. The "Orchard House" has greatly the advantage of houses devoted to the culture of only one or two kinds of fruit, as it is by no means unusual to find cultivated in it Grapes, Figs, Peaches, Nectarines, Apricots, Cherries, Plums, and even Pears and Apples. Where it is proposed to grow various sorts of fruit in one house, it is, no doubt, advisable to adopt and to adhere to the pot system of culture. Indeed, this system would appear to have been at one time considered the only one applicable to the orchard house. But this is by no means the case, and although excellent fruit has no doubt been produced by this method, yet few will be found, I think, inclined to dispute the fact that still better have been produced, at a tithe of the trouble, on trees planted out in properly prepared borders, or beds of soil, and treated in a more natural manner.

My experience, as regards the pot culture of fruit trees, has not led me to form an opinion similar to that expressed by a writer upon this subject, who asserts that "the best Peaches he ever tasted were from trees grown in pots."

But even in cases where it may be considered desirable to grow various sorts of fruit trees in pots, on account of the limited area of the structure in which they are grown, or for the sake of securing greater facility for the rearrangement of the plants, &c., it is still, I think, unadvisable to adopt the severe system of pinching or stopping which has been recommended by some writers on the subject. As has already been said, where, in a house of moderate dimensions, it may be desired to cultivate a considerable variety of fruits, it is then doubtless, advisable to adopt the pot system of culture, as this affords considerable advantages which the planting-out system does not—such as the placing of the trees in the open air in suitable situations, when their fruit has been gathered, and by this means giving additional space to other varieties whose fruit may be approaching that condition. Then, at certain seasons there is the advantage of being able to remove the whole of the trees, for a time, into the open air, with benefit to them, while the house can at the same time be used for other purposes. But in larger garden establishments which usually contain a variety of glass structures which are expected to furnish an abundant and continuous supply of fruit throughout the season, and where collections (more or less extensive) of stove and greenhouse plants are also cultivated, requiring unremitting attention—in such cases I am inclined to think that the fewer fruit trees cultivated in pots the better—this system if practised extensively does not furnish an adequate return for the labour employed.

We have here an ordinary lean-to Peach house, about 30 feet long by 12 feet wide, the roof of which is covered

by two Peach trees, viz., a Royal George and a Noblesse, trained to wires stretched length-ways across the house, at the distance of 15 inches from the glass. The house has been slightly forced, and the fruits of the Royal George variety, which occupies the warmest end of the house, are now (July 7th) nearly quite ripe, and will be succeeded by the Noblesse in due time. These fruits of the Royal George are large and well coloured, of the finest possible flavour, and very few of them weighing less than 8 ounces, many of them considerably more, and they are as regularly distributed over the surface of the tree as if they had been so placed by the hand. This has more or less, been the case every season since the trees came into bearing, some fifteen or more years since. And these trees, with the exception of the usual training, and thinning of the fruit, and the necessary attention with regard to watering and syringing, have really required very little or no attention. At all events I very much doubt if in double the space, and with double or even triple the amount of trouble and attention, there could be found fruit equal in quantity and quality on trees grown in pots. This inclines me to think that fruit of first-rate quality might have been more plentiful than it is now, had an equal or even a less amount of capital than was invested in the erection of orchard houses in many gardens some fifteen or twenty years ago been laid out in the construction of narrow and cheap lean-to or span-roofed glass houses or cases in

which the Peach, the Apricot, the Cherry, the Pear, &c. could each have had their separate compartments, each planted in beds or borders of, prepared soil suited to their respective varieties, and trained under the roof at such a distance from the glass as would have ensured the full benefit of solar heat and light.

As to the construction and dimensions of the various erections which may come under the denomination of orchard houses or houses adapted to the purpose of cultivating the various kinds of fruits with more certainty as to the prospect of success than, owing to the variable character of our climate during the spring months, can reasonably be expected from open air culture, a few words may be not inappropriate.

The fruit trees occupying these structures may, of course, be either grown in pots or planted out in prepared borders. The term "orchard house" comprises structures exceedingly dissimilar as to form and dimensions, &c.,—from the smallest and economical lean-to or glass shed, altogether innocent of everything approaching to ornamentation, to very expensive and most ornamental span-roofed structures of large dimensions,—all, however, sufficiently well adapted to the purpose in view, viz., the production of good fruit. The owners of contemplated structures of this sort have only to consult their tastes and circumstances as to the style and dimensions of the same; and, although it is unnecessary to incur great expense in the erection of such houses, it is nevertheless seldom advisable to run up flimsy or temporary erections for this purpose, which are seldom found to be the cheapest in the long run. The span-roof form has undoubtedly the advantage in many respects of the lean-to. In erecting a house of the latter form, however, it is unadvisable to exceed 12 feet in width, whatever the length may be, as this width or even less will allow a single row of trees, either planted out or in pots, to be placed on each side of a path, which ought to be in the centre of the house, and not less than 2½ feet wide. If a double line of trees is attempted to be placed on each side of the path, it will soon be found that as the trees increase in size, they will become inconveniently close together, unless the

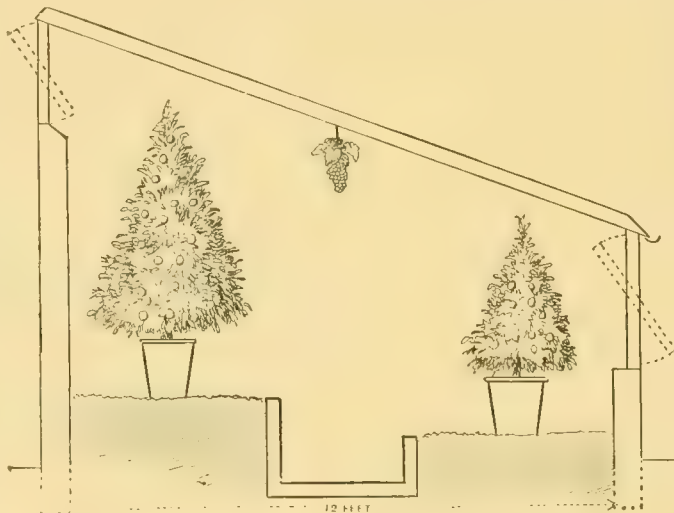


Fig. 1.—Lean-to Orchard House at Culford, with Vines on roof.

width of the house very much exceeds what has been mentioned; and, when such is the case, the span-roofed form is preferable.

Fig. No. 1 will convey an idea of what may be recommended as a lean-to orchard house, with a single row of fruit trees in pots on each side of the path, which is sunk a few inches under the ground level in order to give increased head room, and to allow the development of a Black Hamburgh or Muscadine Vine, trained to a single wire, at a distance of 8 or 10 inches from the glass, over the centre of the path. The aspect of the house should be south, or nearly so; and the Vine should be trained upon the spurring system, and each spur, with its single bunch of fruit, should be tied as close to the wire as possible, so that the shade thrown by it upon the back row of trees will be reduced to its minimum, and will not prove in the least degree injurious to them. The width of the house is 12 feet (inside measure), 10 feet high at back, and 5 feet in front; that is, 2 feet of 9-inch brickwork, surmounted by lights 3 feet wide, hung on pivots from the centre, and made to open altogether, or in lengths, should the house be long, by the turning of a 1-inch iron rod stretching along the front of the house; and to this is fitted a ratchet-wheel, with handle attached sufficiently long to enable the lights to be shut or opened to any desired extent, without pressing upon, or in any way interfering with, the trees in the front row. There are no roof openings whatever, nor are any required, as ample ventilation is secured at the top of the back wall by an arrangement similar to that at the front; that is, by the action of an iron rod upon strong continuous wood shutters 2 feet wide, and extending the entire length of the house.

The front border, on which the pots are placed, is 6 inches above the ground level, and the back border is raised 18 inches, and retained by a 4½-inch wall, or a few courses of brick in the bed. The borders, to the depth of 18 inches or 2 feet, should be composed of properly prepared soil, and the Vine to be trained to a wire over the pathway may be planted either inside the house or outside, as found most convenient. With regard to the roof of the house, the rafters should be placed 20 inches apart, and should be about 4½ inches deep by 1½ inch wide, and should be glazed with 21-ounce glass, 20 inches by 12. They ought always to be cut to a curve, as this induces the water to run down the centre of the panes, drawing it away in a great measure from the putty. This also tends very much to prevent breakage by the expansion of moisture retained in the laps, which should never exceed ¼ of an inch in width. A slip of half-inch board should be nailed on the centre of each of the rafters, and this will leave some half-inch space on each side on which to rest the glass.

In fixing the front lights also, the top shutters should be so arranged that they can be easily removed altogether when not required; and when the fruit has become nearly ripe, the apertures must be at once covered with Haythorn's hexagon net or some similar material. The sort of nets known as No. 5 and No. 20 are each well suited to this purpose, more particularly the latter sort, which most effectually excludes birds and insects, and at the same time freely admits air. During most seasons, and in nearly all situations, a protection of this sort is absolutely necessary for the preservation of ripe fruit of all sorts; and this net, with ordinary care, will last for many years.

Fig. No. 2 shows a section of a structure similar to No. 1 as regards ventilation, &c.; but it is 13 feet wide inside, 4 feet high at front—that is, 2 feet of 9-inch brickwork, and moveable glass lights 2 feet wide; it is 10 feet high at back, with wood

shutters for ventilation, the same as in Fig No. 1. This structure may, of course, be of any desired length, and in it are recommended to be grown various kinds of fruit trees in separate compartments, divided from each other by glass partitions. The advantages of this arrangement will be very apparent, as each particular variety of fruit trees can be grown in the soil most suitable to their requirements, and in other respects have the treatment suited to their existing condition, without in any way affecting other sorts to which that treatment might be unsuited; and, while one compartment might be devoted entirely to Peaches and Nectarines, another might, in like manner, be set apart for Apricots, another for Cherries, and another for Plums, Pears, Figs, &c. The borders are raised 1 foot above the ground level, and the path is 2½ feet wide, and upon a level with the outside soil; but, if more head-room should be desired, it could be sunk 6 inches or more below the ground level. The trees in each case should be planted out in the front border, close to or within a few inches of the front wall, at a distance of 5 or 6 feet, more or less, from each other, and trained under the roof to wires stretched lengthways along the house, at a distance of 14 inches from the glass. The border between the foot of the back wall of the house and the path should be 3½ or 4 feet wide, and on this are to be placed fruit trees in pots of the same sorts as are trained in each respective compartment under the glass. These are intended to be moved into the open air, and placed in suitable situations,

as soon as the shade thrown upon them by the trees trained to the roof of the house is likely to become injurious. But they must be returned to their respective compartments again when the fruit is approaching a state of ripeness, in order that it may be protected from the ravages of birds and insects.

(To be continued.)

GRAPES WORTH GROWING.

IN a recent number of THE GARDEN (see p. 134) there appeared an article from the pen of Mr. D. T. Fish, under the above heading, which contained the following passage in reference to the Golden Champion Vine, "I question if

its raiser has a single Vine of it in his huge Vineyard." This, it may be observed, follows a sweeping condemnation of this Vine, as having every bad quality that a Vine can have, and may convey to some minds a suspicion of dishonesty on my part, in recommending to the public a Vine that I had discarded myself. I know that this was far from Mr. Fish's intention, yet he will admit that such may be the result of what he wrote, if left uncontradicted. I have no intention of saying a word in defence of the Grape itself; on its merits it must stand or fall, and the following passage from my Vine list of 1872 will show that I placed it fairly before the public:—"Golden Champion.—This Vine has, in many localities and in the hands of the best cultivators, developed a spot on one side of the berry that has rendered it worthless, while others find no difficulty with it." As far as my own observation has gone, the latter are ten to one of the former, yet I deeply regret that it should have failed in any one case. When I planted my Vineries here, I had in view chiefly the supply of Grapes for the markets during the autumn and spring months, and planted but a very small number of any Vine except Lady Downes, Black Alicante, Gros Colman, and Seaclyff Black, for winter and spring supply; and the Duke of Buccleuch and Black Hamburgh for autumn supply, for, be it remarked, I force no early Grapes. I, however, find that I have nine Vines of Golden Champion, some of them with several rods to them, and all bearing fine crops of excellent Grapes, ripe and free from blemish. Last year I grew over 100 young Vines of this Grape; they were soon all sold, and after they were gone I had orders from, amongst others, several of the leading London nurserymen, for two dozen at a time. I also observed that it was advertised for. This year my stock of it is already all sold, and I

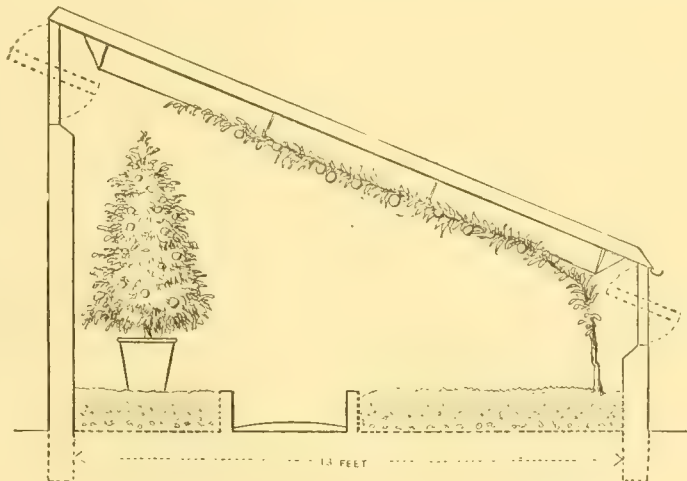


Fig. 2.—Lean-to Orchard House at Culford, with Trees on roof.

am daily refusing orders for it. Now, to say the least of it, this demand for a Grape Vine that has been so unmercifully condemned by numerous writers is curious, unless on the supposition that people prefer the evidence of their own eyes to that of others, and have visited such fine exhibitions of fruit as that at Glasgow last year, Stirling recently, and others, and have observed that the Golden Champion was a leading Grape in nearly all the principal collections.

Tweed Vineyard.

W. THOMSON.

THE PLUM.

THE best varieties of Plum belong to a single species, the *Prunus domestica*. For the convenience of garden cultivation, a division into two groups may be made—dessert and culinary. The following is a list of the varieties of each group arranged according to the season of ripening. Some of the best varieties for each month have been selected.

DESSERT PLUMS.—JULY.

Early Favourite.—Purple, juicy; very good bearer. Ripens about the 20th July.

AUGUST.

De Montfort.—Purple; not large, but very rich and good; does not always bear well.

Orleans Early, or Monsieur Hâtif.—Early in August. A large and good purple Plum.

Peach.—A large red Plum, allied to the Monsieur or Orleans. Very good.

Early Greengage.—A small Greengage, sometimes ripening in the end of July.

Oullins Goldenage.—A large yellow; grown largely in the district of Oullins. Allied to the Greengage; not so rich in flavour, but very productive.

Greengage.—A well-known Plum.

Belgian Purple (syn. Bleu de Perck).—A large and good purple Plum; excellent either for the table or kitchen. Hardy, and a great bearer.

SEPTEMBER.

Jefferson.—A large yellow Plum, generally spotted with red; very rich and good.

Angelina Burdett.—A purple Plum. Very good; a great bearer.

Transparent Greengage.—A very large gage Plum, as rich as the older variety. Does not bear freely when young, but the tree becomes prolific as it increases in age.

Golden Esperen.—A very large and good yellow Plum.

Purple Gage.—A large purple Plum; very rich and good.

Bryanston Gage.—Large, rich, and good; a late Greengage.

Reine Claude de Bavay.—Very large and good; later than the Bryanston.

Coe's Golden Drop.—Large and late; should hang on the tree until it shrivels. A popular and well known Plum.

OCTOBER.

Impératrice Bleue.—A rich and good purple Plum; will hang long on the tree.

Impératrice Ickworth.—Like the foregoing.

Bonnet d'Evêque.—A purple Plum, ripening about the first week in October; excellent for the table or kitchen, very free bearer, and when known will be a very popular fruit.

CULINARY PLUMS.—JULY.

Early Prolific (syn. Early Rivers).—A purple Plum of great use either for garden or orchard; it is hardy and a great bearer.

AUGUST.

Prince Englebert.—A very large purple Plum, and a great bearer.

Mirabelle.—A small yellow Plum, much cultivated in France for the pastry cooks; a very great bearer.

Orleans or Monsieur.—A very well known Plum, purple; the model of most fruit painters.

Belle de Louvain.—A large oval red Plum; a great bearer.

Mitchelson's.—A large black Plum, a very great bearer.

Diamond.—A large black Plum; excessively acid unless thoroughly ripe.

SEPTEMBER.

Victoria.—Well known for its many excellencies.

Pond's Seedling.—A very large and good Plum.

Prince of Wales.—A prodigious bearer.

Autumn Compôte.—A late September Plum, much like Victoria.

Fellenberg (syn. Quetsche d'Italie).—An oval purple Plum, large; makes an excellent preserve.

OCTOBER.

Autumn Beauty.—A very large and good Plum; very handsome.

Wyedale.—A small purple Plum, valuable on account of its tardiness; a great bearer.

CLIMATE AND SOIL.

The early period of the flowering of the Plum renders the bloom liable to destruction by late spring frosts, and a plantation should be made only in those localities proved to be partially free from such visitations. Generally a hill side, sloping south-east or south-west, and as far removed from a water-course or valley as possible, should be chosen; and the colder and more exposed the better, as the trees are not pre-

maturely forced into bloom. It is difficult to fix any limit in Great Britain as to latitude, as the Plum, unless destroyed in its germ by frost, will ripen far north. In France it is supposed to be grown with profit only in the same regions as the Vine. A calcareous loam is the most suitable soil.

The Plum is propagated either by budding or grafting. The best stocks are the Mussel, Black Damask, Brussels, and Mirabelle. An intending planter may buy the stocks from a nursery, and give himself a very interesting and amusing occupation by planting and grafting the trees. The stocks are usually propagated by layers, but many are raised from seed; and the stones of Plums usually consigned to the dust heap, if planted in a small bed kept free from weeds, would furnish many dozens of good stocks well adapted for Plum growing; it is, however, very seldom that the requisite patience will be found for this tedious mode of culture. Those who have the stocks should bud about the first week in August, and if the buds fail should graft the first or second week in the following March.

CULTIVATION OF THE PLUM TREE IN GARDENS.

The Plum produces very fine fruit against a wall with a south-east or south-west exposure, and is well worth a place; but it bears well both as a pyramid or standard. The fruit on a wall is earlier and finer.

TRAINING.

The Plum tree, whether on a wall or as a standard, may be trained in any desired form. The training required for the development of fruit-bearing shoots for all fruit trees is applicable to the Plum; but the pruning knife alone should be used, as sawing the branches is apt to produce "gum." The fruit-bearing branches of the Plum require the following treatment: A strong shoot of a young tree in the spring succeeding its growth will show only wood-buds; these shoots should be reduced to about one-third of their length. During the summer these branches which have been pruned will develop into shoots more vigorous as they are nearer the tip. Those at the base, and for a third of the length, are only from one-eighth to two-fifths of an inch long, in the next third they are from 2 to 5 inches long, while those towards the tip are from 8 to 20 inches in length. These last, except the end shoot, are pinched off when they are 5 inches long, in order to convert them into fruit boughs, to promote the lengthening of the end shoot, and to form the branch. The third spring after the first sprouting of the branch the little branchlets at the base carry a group of flower-buds, in the middle of which is a wood-bud, intended to prolong the branchlet. These are left untouched. The longer branches carry also a certain number of flower-buds towards their middle, and wood-buds at the top and at the base; such of them as are more than $3\frac{1}{2}$ inches long are shortened to that length by cutting, or by completely or partly breaking them, according to their degree of vigour. In this way we encourage the development of new branchlets towards the base to replace those which have borne fruit the year before. The fourth spring, the branchlets which have been left untouched have grown a little, and those that have been pruned are branched. Some of these latter must be shortened a little, to diminish the number of flowers, which would exhaust them, and to prevent their growing too long. This operation is repeated every year, in order to force the fruit-branches to develop at their base shoots to complete the proper form of the tree. This mode of pruning is applicable to all the branches of the Plum tree, under whatever form it may be trained. If there are any empty spaces on the branches, among the fruit branchlets, inarching may be employed to fill up the gaps.

CULTIVATION OF THE PLUM TREE IN ORCHARDS.

Plum trees are best cultivated in orchards, for there they yield the most abundant crops.

FORM OF PLANTING.

In proper orchards the Plum trees are planted in quincunx about 20 feet apart. In the departments of Lot-and-Garonne and Lot, so celebrated for their Prunes, the Plum tree is often planted among Vines and cereals. In that case the field is divided into parallel bands, 6 or 7 yards wide, in which herbageous plants are grown. These are separated from each other

by two ranks of Vines, about a yard apart, and the Plums are planted between these rows at distances of 13 to 15 yards. Thus planted, the trees give a better crop than when they are planted in the corn-fields—no doubt because, in the latter case, the soil is less frequently turned, and is more exposed to drought. In English orchards, Plums may be cultivated with Gooseberries and Currants, or green crops, such as Turnips, Carrots, &c.

TRAINING.

For Plum trees, as standards in orchards, the stem is usually 7 or 8 feet high; but round Paris they are only 2 or 3 feet, as, on trees of this height, the fruit has been found to ripen earlier, and is more easily gathered; but, on the other hand, they are more exposed to white frosts, and no crop can be grown beneath them. Raised beforehand in the nursery, they are either grown on their own roots, or grafted as standards. While some persons leave the trees to form their own heads, others train them on a symmetrical plan from the first—a better plan. Training in "vase" is the best form, as it exposes the greatest amount of surface to the light. This is all the pruning they require, except the removal of dead branches. The fruit branches must be left to Nature to take their proper form.

RENOVATION OF PLUM TREES EXHAUSTED BY AGE OR OVER-CROPPING.

The duration of stone fruit-trees is much shorter than that of pipin-bearing trees. Their worn-out state is shown by the small growth of annual shoots, by the gradual withering of the fruit branchlets on the principal boughs, by the small number and size of the fruit, and by the general want of vigour in the tree. This condition occurs much later to standards left to Nature than to those that are pruned every year. These trees may, to a certain degree, be restored by the same means as pipin-bearing fruit trees; only, as the latent or forced buds of the Plum tree pierce the old bark with difficulty, the secondary or lesser branches, instead of being cut close to the stem, must be left about 20 inches long.

THE DISEASES OF THE PLUM TREE.

These are caused either by bad weather or by noxious insects. Hail, late spring frosts, and continued fogs are injurious to fructification, and produce the "gum" disease. Hence Plum trees ought to have some protection in the fruit garden.

NOXIOUS INSECTS.

The following insects all attack the Plum tree:—The Cockchafer (*Melolontha vulgaris*), *Rhynchites conicus*, *Bombyx neustria*, *B. auriflua*, *B. chrysorrhæa*, *Ants*. *Tortrix pruniana*; the caterpillar of this moth appears with the flowering of the Plum, Cherry, and Apple trees, of which it eats the flowers, and then forms its cocoon within the leaves. The moth, of a dark brown with two white spots on the ends of its upper wings, comes out in June and July. There is a second brood in August. The caterpillars feed on the leaves, change into chrysalides in the ground, and the moths come out in the following spring. This insect is difficult to destroy. *Tortrix funebrana*; the larvæ of this moth live on the flesh of the Plums. The fruit attacked by them falls before the others. The caterpillar enters the ground, turns into a chrysalis and does not become a moth till the beginning of July in the following year. The only cure is to shake the affected Plums off the trees, and them to destroy them with the grubs inside. *Tortrix Weberiana*; the little caterpillar of this moth lives under the bark of all stone fruit trees, where it burrows, and causes a flow of gum which weakens the tree. It changes into a chrysalis under the bark, and the moth comes out in June or July of the next year. *Aphis pruni*: this insect, which is of a greenish-brown colour, attacks the young shoots and leaves, causing the latter to curl up and die. It is destroyed by tobacco-water, or by fumigation. These insects are more prevalent in France than in England.

GATHERING THE FRUIT.

The gathering of the finer sorts of Plums ought to be done carefully after the dew is dried off, by twisting the stalk of each plum singly. They must then be placed in flat baskets and put away in the fruitery for two or three days; for they not only retain all their good qualities, but acquire others, having more flavour and perfume than when eaten quite fresh.

A FEW STRAY NOTES ON PEARS.

It would be a great gain to all of us if gardeners would note the flavour of the Pears which they cultivate, and state their opinions of them in your columns. This would in some measure serve as a guide to gardeners when taking charge of different places. I know of nothing more vexing than to plant young Pear trees, and, after waiting for some four or five years, to be disappointed. Some will say we, as gardeners, should know the best kinds; but soil and climate make all the difference possible. To prove this, I may state that some Pears are first-rate in one place and worthless in another, and I shall give you a few illustrations of the fact. At Arundel Castle, Flemish Beauty is worthless, while at the Royal Horticultural Gardens, Chiswick, it is nearly first-rate; again, that fine Pear, Winter Nelis, is first-rate at Arundel, but worthless here in Northamptonshire. Jargonelle, in York, is all that could be wished, while here it is not worth eating. Again, the old Hessel Pear at Mr. Dancer's, Chiswick, is good—in fact, better than I ever saw it—while here it is not worth growing. Marie Louise is, as far as I know, good at all places. Of Gansel's Bergamotte, the best for size and flavour I ever saw was at Heslington, York; while at Arundel it is only fair, and here not grown. Louise Bonne of Jersey appears generally good, but the best I ever saw for size and flavour was at Bank Grove, in Surrey. Glou Morceau in Wales is first-rate, while at Worksp Manor only moderate. The richest and best Pear I ever tasted was Beurré Rance at Arundel; while at Chiswick, where the fruit is twice the size, it is very moderate. The best twelve varieties suitable for this locality are Williams's Bon Chrétien, Fondante d'Automne, Marie Louise, Louise Bonne of Jersey, Beurré Rance, Bergamotte d'Esperen, Van Mons Léon le Clerc, Passe Colmar, Glou Morceau, Beurré d'Aremberg, Thompson's Pear, and Duchesse d'Angoulême. The small Seckle Pear is useful, but lasts no time; although, perhaps, for flavour alone it has no match.

R. GILBERT.

Burghley.

Fruit at Arundel.—I have read with much pleasure in THE GARDEN (see p. 125) a short account of the beautiful gardens at Arundel, and I should like to see the subject continued. I am always interested about Arundel, and know of no place where such splendid fruit is grown. I have gathered Peaches there 11½ ounces each, twenty years ago. Where do you find such Ribston Pippins as at dear old Arundel? Such Fig trees? Such Pears? The soil at Arundel is of a very stiff loamy character, highly calcareous; the very chalk hills themselves almost surrounding the garden. I shall never forget the first Greengage Plum I tasted at Arundel; I wish I had language to describe it—in fact the flavour, size, and productiveness of the fruit at Arundel is the acme of perfection. The present talented gardener, Mr. Wilson, has quite a history of many of the pets under his charge, and the good-humoured manner in which he describes them, wins for him a host of friends.—R. GILBERT, Burghley.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Ferdinand de Lesseps Grape.—I have this new Grape now ripe, grafted on the Black Hamburg. The bunches are small, the berries medium-sized, and of a rich golden colour. The flavour is rich and delicious.—R. GILBERT, Burghley.

Large Gooseberries.—At a show of Gooseberries held the other day at Harborne, near Birmingham, four half-dozen of each colour were found to be of the following weights, viz.:

	dwt. grs.		dwt. grs.
REDS.....London.....	23 7	GREEN.....Shiner.....	22 15
Dan's Mistake.....	22 2	Surprise.....	20 12
Bobby.....	20 17	Turnout.....	19 10
Clayton.....	20 0	Stockwell.....	19 9
Lion.....	19 0	Matchless.....	18 6
Speedwell.....	18 23	Thumper.....	17 7
YELLOW s. Leveller.....	22 12	WHITE.....Antagonist.....	22 0
Ringer.....	21 0	Hero of the Nile.....	20 10
High Sheriff.....	20 18	Careless.....	19 19
Mount Pleasant.....	20 0	King of Trumps.....	19 15
Leader.....	19 18	Blackley Hero.....	18 0
Catherina.....	16 17	Snowdrift.....	17 20

The Fruit Crop in Sussex.—Apples here are abundant; Pears on walls a fair crop, on some pyramids there are heavy crops, on others none; we had a sharp frost on the 20th of May which injured pyramid Pears very much. Peaches, Nectarines and Apricots with me are very thin, but I have seen good crops of all the three in the neighbourhood. Cherries are a very heavy crop, and the fruit is fine. Plums, especially Morellos, are good on walls, but rather thin on standards and pyramids; of Damsons we have very heavy crops. Figs on walls are a fair crop, as is also that of Nuts and Walnuts; of Quinces and Medlars we have plenty; Mulberries, Cranberries, and Gooseberries are very heavy crops; and of Red, White, and Black Currants the crops are enormous, and the fruits fine in quality; Raspberries and Strawberries are also good. Grapes, of which quantities are grown out of doors here by the cottagers, are at present promising. All the Apple orchards that I have seen this season have very heavy crops of fruit.—Geo. BRESE, Petworth.

LONDON MARKET GARDENING.

THE CAULIFLOWER.

THIS is, perhaps, the most important of all main market-garden crops, especially as a spring crop, and many hundred acres of land are devoted to its cultivation in the vicinity of London. Formerly the produce was all cut and sent into market, but now a well-known firm have materially altered this, for they purchase the entire produce of extensive fields for pickling purposes. Not only has this firm considerably altered the Cauliflower trade and growing, but they have likewise added another branch to the market gardeners' former duties, viz., that of partially preparing, or rather curing, the "curd" before sending it over to the manufactory. For ordinary marketing purposes, earliness is the great end to be attained, for not only is the price for early produce better than that for late, but another advantage is derived from having the ground soon cleared from this crop and ready for another. The autumn sowing is decidedly the most important, and it is generally made in the open ground, in light earth, and a sheltered place, from the 20th of August until the same date in September, according to the locality, weather, and method of practice employed by the cultivator. Certain it is that plants from very early sowings are generally too gross to winter safely, and those from very late sowings scarcely attain sufficient strength to stand the hardships of the weather, both cases being annually fully illustrated in many of our gardens. After the plants come up, are thinned, and have grown a little, say towards the end of October, frames are prepared for them and filled to within 6 inches of the sashes with light soil, into which the Cauliflowers are transplanted about 3 or 4 inches apart. Here they remain during the winter, being merely protected from frost and damp; mats or litter being employed as additional covering in case of severe weather. Dry sand and wood ashes are dredged amongst the plants in dull weather to prevent "blacklegs" and damp; slugs are looked after, decaying plants and leaves picked out, and the surface soil stirred with a stick or very narrow hoe. Dryness is the great saving point of the young crop, and, consequently, good sashes and unremitting attention to airing is a desideratum. Besides being wintered in frames, the young plants are sometimes pricked out into beds and covered over in winter by hoops and mats, the latter being removed in fair and fine weather. In other respects these are treated like those in frames. They are also sometimes wintered pricked out in beds in the open air; but, unless the winter is mild and the soil naturally dry and well drained, this is neither a very safe nor advisable system, especially in low-lying grounds. Before planting out in early spring, they sometimes grow to press against the glass, or even a little higher than the frames, so that the sashes must of necessity be tilted up at front and back, which method has a good and hardening influence upon the plants.

Instead of being wintered in frames, they are sometimes planted out in October or November under hand lights, nine plants being set under each, and protected with litter or mats in the event of very severe weather. These lights are tilted up on the south or west side in favourable weather, and greater care is here necessary in keeping the ground dry than in frames. The end of January and first of February, however, is the usual time for planting them out under these lights, and in February, too, the first open-air plantations are made. The rows of hand lights are commonly from 4 feet to 6 feet apart each way, being intercropped with Cabbages and Lettuces. As soon as the plants are becoming too thick, the number is reduced to three or four, the rest being carefully lifted and transplanted under similar circumstances, or 3 feet by 2½ feet apart in the open ground, and with Lettuces between them. As those under the lights advance in growth, the soil is drawn to them in the form of basins; and, where convenient, and time can be spared for the purpose, manure-water is given to them. From under these covers Cauliflower is generally cut towards the end of April, and from this and three other successive main plantings the supply is kept up till July, when it is continued from seed sown in frames in February. After these early crops are marketed, the Cauliflower season may be said to

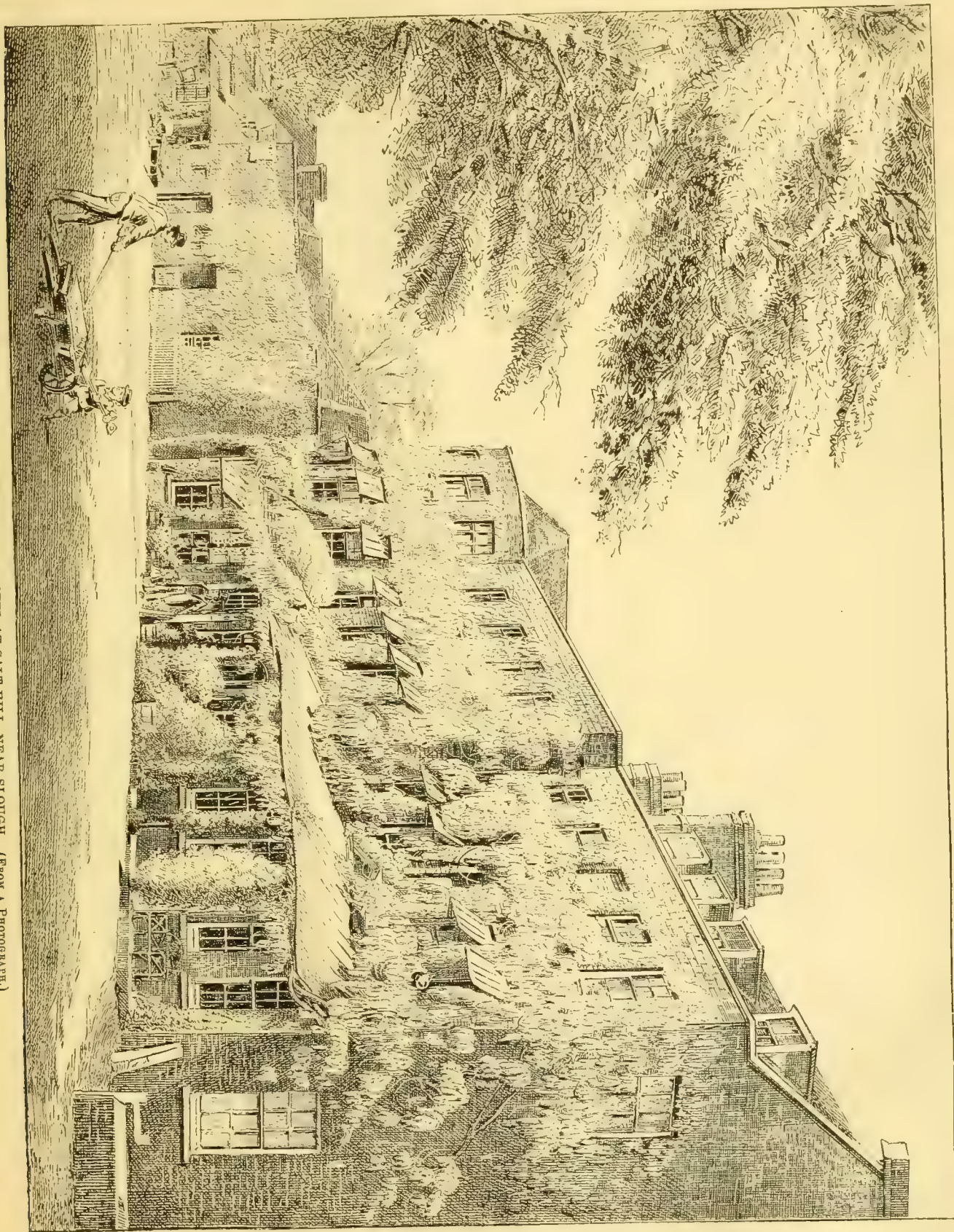
be past, because late summer crops of it are not found to be so remunerative as French Beans, Vegetable Marrows, and Celery; nevertheless, some growers keep up a constant supply until Christmas. The Walcheren and Snow's Winter White, however, are a good deal grown for late autumn use, so as to succeed Marrows and French Beans, and precede the Broccoli. The Early Erfurt and Walcheren are the principal sorts used for the spring crops; indeed, these sorts constitute, with few exceptions, all the sorts grown. Early Cauliflowers are succeeded by Celery, Turnips, French Beans, Lettuces, Tomatoes or Vegetable Marrows; in fact, sometimes two crops of Lettuces are got from amongst the Cauliflowers before the above are planted. In February and March, fields of Radishes are sometimes sown, and the Cauliflowers planted amongst them; so that the Radishes are removed for market before the latter make much progress. Spinach is sometimes treated in the same way as the Radishes; but in this case the Spinach should be gathered before it grows strong enough to injure the other crop.

W. F., in "Field."

THE GREAT WISTARIA AT SALT HILL, NEAR SLOUGH.

AMONG the impressions that Time, the great effacer, cannot easily destroy, are many of those afforded by the vegetable kingdom. The living mosaic of large Violets and Gentians on the high Alps in early June, the Chestnuts at Bushy Park, the Hawthorns in the Phoenix Park, the giant Pines on the Sierras of California, a good flower-show in the great tent in the Regent's Park, Rhododendrons in June in the Surrey nurseries, the woods in a diversified region of the Atlantic States of America in early autumn, are a few among the attractions of the world of plants which are not easily forgotten. I have seen few things in garden or in wild more impressive than the enormous plant of Wistaria which covers the famous old house at Salt Hill. When Mr. C. Turner, of Slough, drove me there from Slough one evening last summer, it seemed a huge wall of flowers with the delicate hue of the sky in them, and produced in such lavish abundance as no description and no illustration can give any idea of. The spurs of this fine specimen thrust themselves out from the wall to a distance of 4 and even 5 or 6 feet in some places, as if they could not get room near the wall to show all their wreaths of flowers. This Wistaria is, I believe, one of the first plants introduced into the country. It was planted at first against one of the iron supports of the verandah. This iron pillar the huge old stem has long ago pushed up and broken in its arms. Many are, no doubt, familiar with large specimens of this plant; but few avail themselves of its grand capacities for the embellishment of their gardens and houses. Most of the fine specimens are the result of little more than chance and the great natural vigour of the plant. Such a giant is surely worthy of as careful planting and as good nourishment as many of the untried or half-tried Conifers we are now placing on carefully prepared mounds in our pleasure-grounds. Considering its great vigour as compared with the climbing plants with which we generally associate it, the Wistaria is a climbing tree. As such, it should be made more of by artistic gardeners. Yes, a climbing tree, which may be trained over other large trees—as it grows in its native country; a tree, one plant of which will cover a large house on all sides, and of which, combined with the American Vines and the strongest and the handsomest of the climbers hardy in our clime, a great variety of living pictures may be made in our pleasure grounds, gardens, and wildernesses. The Americans have a way of training this plant against their houses which ought to be more generally known on this side the Atlantic. They place single lines of very strong wire from the ground in the small front gardens of some town houses to the top of the houses, and on each a dense wreath of Wistaria is trained; the base of each great wreath being 6 feet or more from the wall, the house is free of the wreath the whole way up till the top is reached, and there is no difficulty in getting at the face of the building when that may be desired. A grand effect might be produced with the Wistaria by planting it on the top of high cliffs, quarry-banks, chalk-pits, &c., and allowing the shoots to hang down

OLD PLANT OF WISTARIA COVERING THE HOTEL AT SALT HILL, NEAR SLOUGH. (FROM A PHOTOGRAPH.)



and run about naturally. If allowed to scramble over some trees or high stumps on the top of the bank or cliff, the effect would be heightened. We should like to know something more of the history of the Salt Hill specimen, and shall be glad if Mr. Turner, or somebody acquainted with it, will tell the readers of THE GARDEN more about it. W.

THE NURSERY OF THE CITY OF PARIS.

MANY imagine that this was destroyed during the late conflict in France, but such, happily, is not the case. On the contrary, it exhibits but few traces of having been so near one of the most vigorously contested points in Paris. Before entering the avenue leading to the gates I noticed, however, that many of the Plane and Chestnut trees had bullet marks on them, and in one or two places the iron palisades were torn and twisted by either shot or shell. On a little square of fresh green turf to the right, I found a choice selection of the best sub-tropical and bedding plants very tastefully arranged. One of the chief features in this quarter is a noble Weeping Willow, which hangs gracefully in fresh green festoons over a small pond of hardy aquatics. The margins of the large flower-beds and masses of foliage plants are relieved by tastefully arranged little groups and isolated specimens of well grown sub-tropical plants. A noble mass of the variegated New Zealand Flax had leaves fully 6 feet long and nearly 5 inches across, bearing at the same time two enormous flower-stems nearly 10 feet in height. This plant has stood out in the position which it now occupies for several years, and is now thoroughly established, though, of course, it has had some artificial protection during winter. A blue gum tree here is 15 feet in height, and a Cupressus Lawsoniana, about the same height, is growing very freely. I have repeatedly noticed how wonderfully fresh and healthy Conifers in general look during hot weather, when most other plants suffer from excessive drought, and those in the neighbourhood of La Muette are no exception to the rule. A fine group of *Zea japonica*, fully 8 feet in height, forms a distinct and pleasing object here, and I should like to see this and many other of the best ornamental Grasses grown as freely in the sheltered portions of our London parks as they are in the public gardens about Paris. A grand mass of *Gymnothrix latifolia* forms a dense cylindrical tuft of dark green drooping foliage, quite 8 feet high; and both flowering and foliage plants are abundant, but they are judiciously toned down by means of belts and masses of Cannas, *Dracænas*, and other beautifully-formed plants. Some of the combinations here are pretty and distinct, especially one small round bed with which I was much pleased. The central mass consists of variegated Pampas Grass, on a carpet of crimson *Alternanthera*, the points being formed of narrow lines of *Sedum carneum variegatum*, which is one of the best of all plants for lines or carpet beds. Another arrangement differed from this in being smaller, and the round bed was a simple carpet of *Alternanthera amabilis*, the base of the Pampas Grass being confined and partly supported by means of neat trellis work covered with the silvery *Gnaphalium lanatum*, so as to form a natural basket, over which the slender foliage of the Grass droops as elegantly as spray from a fountain. Hybrid Begonias are used here for flower-beds during summer; they look vigorous, healthy, and flower freely. Here, as elsewhere, we find the surface of the beds mulched with manure or short litter, which goes a long way towards preventing drought. Beneath this, the surface of the beds is moist and cool all through the hottest weather. About these mulched beds there is no unpleasant appearance, and the plan is worthy of adoption in all dry and hot situations. With an oblong bed of *Dracæna australis* fringed with a belt of scarlet *Pelargonium* I was much pleased, as well as with another of *Pelargonium Madame Vaucher*, margined with a broad belt of scarlet, the whole being edged with the creamy variegated kind called Lady Plymouth. I noticed that a border of mixed shrubs was fringed with a row of flowered Begonias, and in front a sinuous belt of *Sedum carneum* meandered through a dense carpet of crimson *Alternanthera*. This last struck me as being a novel and effective arrangement. Trained up pillars

at the entrance were one or two healthy plants of *Rhynchospermum jasminoides* covered with pure white deliciously-scented flowers. These plants stand out here all winter with some slight protection. The *Erythrina* does well planted out here, and produces gorgeous spikes of deep coral red, or crimson pea-shaped flowers. I noticed a mass of *Eucomis punctata* in one of the beds flowering freely; though not showy, this favourite plant is well worth cultivation in warm sheltered portions of the sub-tropical garden. A bold mass of Cannas and of *Ficus elastica* forms a nice termination to the upper portion of the square.

The plant and propagating houses are mostly low span-roofed structures, partly curvilinear and partly of the ordinary form, and nearly all heavily shaded with canvas supported on frames about a foot from the glass, while occasionally straw or Reed mats, so common on the Continent, are used. The propagating house has three beds down the centre and two side benches. There are three walks down between the stages or pits, and the place is roomy and well adapted for multiplying plants by the thousand. It is now nearly empty; but, in the winter and spring, it is full of cuttings in all stages, almost every inch of available space being covered with the peculiar shaped flat cloche, which is so much liked by French propagators. Many of the plant houses, in which Musas, Palms, and other decorative plants are stored during the winter months, are now empty, the stages being in several cases covered with Cobæas, Passifloras, *Tropæolums*, and other trailers, which grow freely, and give the houses a clean appearance. In one of the stoves I came upon several plants of the by far too much neglected *Hæmanthus coccineus*, and, along with it *Psychotria leucantha* was producing dense clusters of pure white flower-buds. Azaleas are grown here by the thousand, the plants, which are neat and bushy, being now plunged outdoors to ripen their wood. They are nicely arranged in large circular beds or along the borders, and are edged in front with belts of *Phlox Drummondii*, purple *Petunias*, and *Echeverias*. *Chrysanthemums* are plunged out in long breadths, fully exposed to sun and air. Thus treated, their growth is as dwarf and robust as one could desire.

I noticed here a fine collection of all the best kinds of *Camellia* in excellent health, and they looked as if they would bloom well. At one end is a large house devoted to Palms, Cycads, and other foliage plants. One end of this house is excavated two or three feet below the level, so as to accommodate tall specimens. In the centre is a circular tank with a well arranged rockery in the middle, on which Ferns, *Dracænas*, Grasses, small Palms, and Bromeliads are tastefully grouped or arranged in picturesque vases, the whole being surmounted by a handsome specimen of *Monstera deliciosa*, which sends down its thong-like roots into the water below. In the large Palm house I noticed several thick-stemmed plants of the Date Palm, which some of your readers may remember, as they occupied conspicuous positions at the Paris Exposition of 1867. The Fernery is well stocked with a clean and healthy collection, most of which are small plants. This house is very heavily shaded with laths tied together, the ends being painted with a composition of Brunswick green, whiting, and glue or size, which answers all the purposes of shading better than whiting alone. The railway passes through this portion of the garden at a low level, and the sloping banks are tastefully fringed with delicate green *Acacias* right down to the rails. *Ficus elastica* seems a great favourite with French cultivators, for here, in a plot of cool frames, I found them by the thousand, all fresh and healthy; all the protection they require being supplied by means of straw hurdles or frames supported a foot or two above them on slender upright stakes. In this compartment were 18 neat little span-roofed houses, conveniently arranged on each side of a covered corridor. These houses are about 12 feet wide and little more than half that height, having a central path and low side benches for Heaths, bedding, and other small plants. Shelves, suspended from the rafters, afford additional space for seedlings or pans of cuttings. Thuja hedges, 10 or 12 feet high, are used as shelter for sub-tropical plants while hardening off before being finally planted out in their summer quarters. Before concluding my remarks on this establishment I must allude to the caves, or subterranean

excavations beneath. These extend in various directions, and are a little over 6 feet high, pillars having been left here and there when the great bulk of stone was removed for building purposes. All through the winter these caverns are made useful as store-houses for the great fleshy roots of Cannas, Caladiums, and other sub-tropical plants. *Aralia papyrifera* also does well in the equable temperature of these caverns, and we recommend



View in central corridor.

all who have the convenience of a rock cellar, or indeed any cellar inaccessible to frost, to adopt this simple and economical system of preserving half-hardy plants through the winter.

F. W. BURBIDGE.

Horticulture in Belgium.—"W. M." (see p. 123) speaks of the School of Horticulture at M. Van Houtte's, which has not been in existence for two years, as still carried on, and again, of "Botanic gardens as a means of scientific and popular instruction." I do not know what other botanic gardens may be like in Belgium, but I pity any one who goes to the one in Ghent for instruction. I had no idea plants could be kept alive so managed. Twenty plants standing in less room than one would require, with naked stems 6 or 7 feet long, and heads like small brooms, formed a sight rarely equalled. Add to this that few of these miserable objects were named, and your readers may imagine how scientific knowledge is advanced by such an institution. Those, however, who use their eyes, will see some things well cultivated wherever they go, and special cultures, favoured by special circumstances, particularly good in many places there.—J. R. PEARSON, *Chilwell Nurseries*.

A New Patent Glass-cutter.—This interesting and, at the same time, useful novelty has just been brought under our notice by Messrs. Dockrell, South Great George's Street, Dublin. Having tested it, we are in a position to state that it will cut glass of any thickness equally as well as the ordinary diamond, for which it forms an excellent substitute. Gardeners will find this little instrument invaluable; and, when it comes to be better known, we venture to say few gardens will be without one. It has the following advantages over the glazier's diamond: it can be purchased for one-fourth the price of that instrument, and the unskilled labourer can use it with as great facility as the skilled mechanic. We have much pleasure in recommending it to our practical friends, and feel sure those giving it a trial will not be disappointed.—*Gardeners' Record*.

A Conflict with a Wheelbarrow.—If you have occasion to use a wheelbarrow, leave it, when you have done with it, in front of the house with the handles towards the door. A wheelbarrow is the most complicated thing to fall over on the face of the earth. A man will fall over one when he would never think of falling over anything else. He never knows when he has got through falling over it, either, for it will tangle his legs and arms, turn over with him and rear up in front of him, and just as he pauses to congratulate himself, it takes a new turn and scoops more skin off him, and he commences to evolve anew, and bump himself on fresh places. A man never ceases to fall over a wheelbarrow until it turns completely on its back, or brings up against something it cannot upset. It is the most inoffensive-looking object there is, but it is almost as dangerous as a locomotive.—*American Paper*.

THE GARDEN IN THE HOUSE.

ARRANGEMENT OF COMMON FLOWERS.

The only flowers to which I intend to direct attention in this paper are common everyday varieties. So much has been written on the subject of elaborate designs that I think I am quite justified in saying a few words in favour of such as can be quickly decorated, and of such flowers as are within the reach of everybody. The most effective-shaped stand for a drawing-room is one having a flat circular dish at the bottom, with a slender trumpet-shaped vase rising out of its centre. Designs of this kind can be obtained in large or small sizes, according to taste and price; if for everyday use, I would recommend strong glass to be selected, and the trumpet should unscrew—two points which should be borne in mind; for if the glass is strong, it is not easily broken, and when the trumpet can be unscrewed, the whole can be packed in little room. So much for the stand; now for the flowers, a few of which, when arranged, look very effective. One design, which had a pretty appearance, was composed of white Water Lilies, common Bracken, wild Grasses, and Ribbon Grass. The dish was filled with the Bracken, in which were arranged four Water Lilies, the points of some of the Ferns being placed so as to stand upright, which obviated the flat appearance that might otherwise have existed; through these were stuck spikes of light-looking freshly-gathered Grasses, and a few pieces of Ribbon Grass. The trumpet was filled with Grasses—Ribbon and wild varieties mixed—and four small fronds of Bracken, cracked, so as to droop and diminish apparently the length of the trumpet; a spray of variegated silver Ivy, twisted up round it would have been an improvement. I have arranged stands very similar to this, with the exception of blue Forget-me-nots, which I mixed through the Grasses in the bottom dish as well as in the trumpet. Another stand which looked well, consisted of Grasses, Bracken and Hart's-tongue Ferns, wild Poppies, Dog Daisies (*Chrysanthemum leucanthemum*), and Corn flowers. This stand had first been filled with the Ferns and Grasses, and afterwards with the flowers, which were placed through them, as these kinds have slight stems. The Grasses, being put in first, formed a support for them. The worst of the Poppy is it lasts but a very short time. However, as a fresh supply of it can be obtained in almost every Corn field, this need not be considered a drawback, and the effect of the stand was very charming. Hollyhocks, Roses, Rhododendrons, and Lilacs all look well in these kinds of stands; a remark, by-the-by, which puts me in mind of a prettily-arranged one I saw in spring. The only flowers employed in this case were common Lilacs and Laburnum, long single sprays of the latter being made to droop down from the trumpet. I need scarcely say that all the flowers I have mentioned are common and easily obtained; indeed, with the exception of the Water Lilies (which grow wild in many ponds), they will be found in almost every cottage garden, field, and hedgerow; few, therefore, can say that the expense of flowers is what hinders them from having stands of them in their sitting-rooms.

A. H.

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

Asters.—Amongst the many varieties of these, which are now everywhere abundant in windows, the *Chrysanthemum*-flowered varieties seem best adapted for that purpose. These, associated as they often are in London balconies with the gracefully-drooping spray of the Virginian Creeper, have a fine effect, and their beauty is by no means short lasted.

Window Ferns.—I find the different varieties of *Pteris* to succeed best in windows. *P. tremula* does admirably with me, as does also *P. serrulata*; but best of all *P. cretica albo-lineata*, which produces plenty of healthy fronds, even under very ordinary treatment. Though not a Fern, I may mention that I have a large bell glass full of the toothed *Lycopod*, which looks as green and healthy as possible, though the glass is never removed, and all the water it gets is what runs down between the glass and the rim of the pan. The great secret of success with such things is thorough drainage, which should be sufficient to keep the roots well above all stagnant water.—J. H.

Attar of Roses.—Rose oil comes almost wholly from the southern slopes of the Balkan mountains. There are at least one hundred and fifty places where its preparation is carried on, the most important of all being Kizanlik. The Roses are planted in rows, like Vines. The flowers are gathered in May, and, with the green calyx leaves attached, are subjected to distillation. Five thousand pounds of Roses yield one pound of oil. As may be expected, so valuable an article is often adulterated. The added substance is "rosia" oil, often called Geranium oil when procured from Egypt. This oil comes from species of Grass.

THE INDOOR GARDEN.

THE EARLY ROMAN HYACINTH.

THIS charming early-flowering variety, so dwarf and free, and bearing chaste delicately-scented white flowers, is now largely imported from France, Holland, and Belgium for forcing purposes. This season, owing in part to the great yearly demand for it, and in part to the late spring frosts, this beautiful Hyacinth is marked in Continental lists as being very scarce, and an enhanced price is the result. This will scarcely affect its growth for forcing purposes, because it is so useful, and any one walking through Covent Garden Market, at the end of October, will not fail to see the delicate flowers of this Hyacinth displayed in the windows. It forces with great rapidity, and the bulbs, though not nearly so large as those of our ordinary Hyacinths, each produce several spikes of flowers. There is a blue form of this early Hyacinth, sometimes called Parisian Hyacinth, that is a fortnight or so later than the white one, but it is a useful succession notwithstanding. The early Roman Hyacinth is well worthy the attention of those who have a glass structure in which a few things can be got early into flower. Even where there is no artificial heat, a few of these early Hyacinths can be had in bloom some time before our ordinary Hyacinths, even when planted at the same time. Last spring, having but little room to spare, I planted some of the ordinary Hyacinths in pots, using 32-size, and placed one bulb in each. Round some of these I put a circle of early Roman Hyacinths, using four, five, or six bulbs, according to their size, and I found that these started into growth, and actually came into flower almost before the Hyacinths in the centre of the pots had made much growth. As soon as the flowers furnished by the Roman Hyacinths had died away, the foliage was removed with the decaying flowers, and thus the ordinary Hyacinth had space to grow, and in each case flowered finely, notwithstanding the presence of the bulbs just alluded to. Perhaps this practice is hardly to be commended, but I did it for economy's sake, and I was well pleased with the results. As a matter of course, the soil should be thoroughly good, and it is well to apply a little weak manure-water or a pinch of a patent manure to the late Hyacinth. It matters not what care may be taken of the bulbs of the early Roman Hyacinth, or how scrupulously they may be preserved, they never flower so early the second year as fresh-imported bulbs do. R. D.

RHODODENDRONS FOR THE CONSERVATORY.

THERE are few finer conservatory plants than some of the Hybrids which have been raised from species of Himalayan and other East Indian Rhododendrons. The following selection includes some of the very best varieties, all of them being of easy culture in peat or heath-soil.

R. Sesterianum.—Raised by M. Rinz, of Frankfort; leaves medium-sized; flowers very large and of thick texture, handsome in shape, delicately scented, of a pure white colour, spotted with yellow on the upper side of the petals; a cross between R. formosum and R. Edgeworthi.

Dalhousiæ hybridum.—Very large rosy-white flowers; leaves smooth, of medium size; calyx fringed. Raised by Mr. Anderson Henry of Edinburgh; a cross between R. Dalhousiæ and R. formosum.

Princess Alice.—A cross between R. Edgeworthi and R. ciliatum. Raised by Mr. Veitch, of Chelsea. Branches numerous, slender, brown; leaves small, oval, pointed, fringed with brownish hairs on the margin, nerves, mid-rib, and stem; flowers large rosy-white.

Præcox.—A cross between R. ciliatum and R. dahuricum, raised by Mr. Parker. It forms a dwarf shrub, which flowers in March and produces a great abundance of large violet blooms. There are several varieties.

Princess Royal.—A cross between R. javanicum and R. jasminiflorum, raised by Mr. Veitch. It is the finest pink variety ever raised.

Princess Alexandra.—A plant of regular compact habit, producing a profusion of tubular pure white flowers, with rose-coloured stamens.

Princess Helena.—A cross between the preceding kind and R. jasminiflorum. A most charming plant, producing an abundance of long tubular flowers of a light flesh-colour shaded with rose.

Fragrantissimum.—A cross between R. Gibsoni and R. Edgeworthi, with very regular compact habit, and producing a profusion of snow-white flowers, slightly dotted with rose-colour on the upper divisions, and tinged with rose at the base of the petals; deliciously fragrant.

Dalhousiæ.—A vigorous-growing plant of compact habit,

and bearing enormous rosy-white flowers in terminal bouquets. In the conservatory it grows bushy, and exhales a sweet perfume. Himalayas.

Jasminiflorum.—A native of Malacca, of bushy habit; leaves dark green, shining. Flowers fragrant, tubular, white tinged with rose, and with orange stamens. Blooms often twice in the year.

Ciliatum.—A Himalayan species of dwarf bushy habit; leaves soft, oval, fringed; flowers large, varying from pure white to deep rose-colour. A hardy variety, flowering in March.

Brookeanum.—A native of Borneo, with large and shining, leathery, longish-oval leaves; flowers broad, thick in substance, of a handsome orange colour, produced in umbels. Blooms in April and May.

Veitchianum.—A very handsome species from Moulmein, forming a medium-sized shrub; leaves leathery, oboval acute, glaucous underneath; flowers pure white, 4 inches across, with the margin of the petals elegantly scalloped, very freely produced. The variety R. 'V. laevigatum' is from the same country, and has plain-margined petals.

Edgeworthi.—A native of the Sikkim-Himalaya, with a semi-trailing habit, and oval lance-shaped pointed leaves, rust-coloured and woolly beneath; flowers large, white, delicately shaded with rose and deliciously fragrant.

Hookeri.—A species from the mountains of Bhootan, where it grows at the same elevation as *Pinus excelsa*, and is consequently a hardy kind. It forms a tolerably tall shrub, with small, oblong, leathery leaves, glaucous on the under-surface. The flowers are large, numerous, and of a rich crimson colour.

Formosum (Gibsoni).—A Himalayan species, with small leaves and numerous large white flowers, resembling those of R. Edgeworthi.

Javanicum (which is rather tender) and **Boothi** are also well worthy of notice.

Nuttalli.—This was collected on the mountains of Assam and Bhotan, and was sent home to Mr. Thomas Nuttall, of Rainhill, near Liverpool.

Countess of Haddington.—This was raised by Mr. Lees, gardener to the Countess of Haddington, at Tynningham. It is a cross between R. Dalhousianum and R. ciliatum, and is one of the finest hybrids in cultivation.

Henryanum.—This was raised by Mr. Isaac Anderson Henry, and is a cross between R. Dalhousianum and R. Sesterianum. It is pure white in colour, and sweet-scented.

Formosum magnificum.—This is a superior form of R. formosum or Gibsoni.

Multiflorum.—This is a dwarf compact-growing kind, which flowers from the axils of the leaves. The blossoms, which are white, are produced in great abundance.

The culture of all the foregoing species is exceedingly simple. All they require is to be planted in pure heath soil in well-drained porous pots, not too large; or they may be planted out in a conservatory or winter garden with Camellias, and will require no greater amount of attention. In summer the potted plants may be placed in the open air in half-shady positions.

Cattleya Pinellii.—This effective little species is just now flowering in the Orchid houses at Kew. It is a pretty little plant, belonging to a group known in gardens as *C. marginata*, *C. pumila*, and *Lælia pumila*. Its pseudo-bulbs are from 2 to 4 inches long, and bear one, and rarely two leaves, of a deep green colour. The flowers measure about 2 inches across. The sepals and petals are of a rosy-purple hue, shaded with lilac, the lip being of a dark velvety-purple, margined in some varieties with a narrow and irregular white border. The disc is furnished with from five to seven rows of dark purple papillæ, and the whole flower is slightly odorous. The plant grows well on a block, but should be well supplied with moisture and suspended near the light in an intermediate house. It blooms from the second young growth, before the leaf becomes fully developed.—B.

Neglected Greenhouse Plants.—How is it, I would ask, that such fine plants as *Thunbergia chrysops*, *Manettia bicolor*, and *Siphocampylus betulæfolius* are never exhibited in the various collections of either town or country? There are very many old friends which are now lost sight of, and which, if grown and flowered as they were some years since, would give more variety to the collections of stove and greenhouse plants than they have at present. The combination of purple and sky-blue with the golden eye of the *Thunbergia* is most lovely. I remember growing and flowering it many years ago, and it was then thought somewhat difficult to flower; but it only required root room, and the main stems to be

thinned to two or three, and the laterals carefully trained and stopped by pinching the extreme points. The *Manettia* and *Siphocampylos* (the latter a greenhouse shrub) are very free flowerers, and easy to manage if kept clean.—AN OLD SOLDIER.

THE ARECA PALM.

FEW, if any, of the noble family of Palms present a more lovely or graceful appearance than the Areca Palm (*Areca Catechu*), nor does any other Palm perform a more important part in reference to the manners and customs of the people of Southern and Western India than this does. It is a necessary adjunct to every Cingalese and Indian village wherever it will grow; but, being naturally a lover of moisture, it finds its most congenial home in the well-watered valleys of Ceylon. The nut of this Palm forms a principal ingredient in betel chewing material, a luxury in which the Cingalese and Tamil people, old and young, of both sexes, freely indulge. Of all the Palm tribe the *Areca* is one of the most graceful and delicate. It grows to the height of 40 or 50 feet, without inequality on its smooth polished stem, which is bright green towards the top, and supports a mass of beautiful feathery foliage. In some of the mountain valleys this Palm is unproductive, and when such is the case it is cut down and used for water shoots in the Rice fields, and also for making pingoes (the balancing-sticks on which the natives carry their burdens).

PETER WALLACE.

FUCHSIA SYRINGÆFLORA.

THIS beautiful species is hardly known beyond the limits of a few botanic gardens, in which it appears, strangely enough, to have passed a considerable time almost unnoticed. The coloured plate of the flowers and the description given by M.

Carrière in the last number of the *Revue Horticole* will, however, we have no doubt, have the effect of directing attention to the merits of a plant which has been too long overlooked or neglected. The following is M. Carrière's description:—"Picture to yourself a plant with a stem from 3½ to 6½ feet high, two-thirds of the upper part of which are furnished with branches in dense whorls, successively diminishing in length as they reach the top, and forming a handsome conical head, each branch terminating in a racemose

panicle of hundreds of tender lilac rose-coloured flowers, resembling the inflorescence of the Lilac, whence the specific name of *syringæflora*. The flowers have a very long tube, and the sepals are very long, narrow, and much reflected. The petals are about half the length of the sepals, and of the same light lilac rose-colour; they are also separated from each other and spread widely, not forming a cup as in other kinds of *Fuchsia*. The resemblance to the flowers of the Lilac is, in fact, so great as to deceive almost any one at first sight. The leaves are from 3 to 6 inches long, sub-elliptical in shape, very much pointed towards the apex and narrowed towards the base. This variety flowers from October to February, and is of very easy culture in soil composed of free loam mixed with leaf-mould, stable-manure, or heath soil. It is readily propagated by means of cuttings taken in winter and

struck in the usual way. Plants raised in this way will flower the following winter." It may be obtained at the nurseries of MM. Thibaut and Keteleer, at Sceau, near Paris.

Variegated Japanese Maize.—Among ornamental plants, this is one of the most useful; but, though hardy enough for sub-tropical gardening, it does not stand the wind well. In sheltered situations, however, it is one of the most telling plants that can be used, particularly near water. For the conservatory it is indispensable, and also for house decoration. In growing it for such purposes,



Areca Palms.

the object should be to have stout plants, with broad, healthy, and well-variegated foliage. When it runs to seed, it is generally past its best. I find that to have all leaves in good condition at the same time, it requires to be grown freely in a Vinery temperature, with plenty of light; and, after it is well grown, it may be introduced into the conservatory. When grown slowly in a greenhouse, the earliest formed leaves turn yellow at the points, which gives the plants a starved appearance. It is important in the first place to secure seed from the best variegated plants. Large well-formed seeds are not the best to sow, for they often produce plants without any variegation. Select, therefore, seeds of moderate size, and sow them in 6-inch pots, perhaps a dozen in a pot. Start them in a warm house, and, as soon as they have made a few leaves, it will be seen what plants are best variegated; and these should be singled out before the seedlings get pot-bound, and potted in rather light rich soil, in 6, 8, or 12-inch pots, putting four, six, or eight plants in a pot, in order to have a good head of foliage quickly. After potting they should have plenty of water at the roots. When treated liberally and grown on smartly, I find that good-sized plants can be had in six weeks or less. By sowing successional batches, therefore, it is quite possible to have nice plants nearly all the year round.—S.

Musa Cavendishii.—At Lightcliffe, near Wakefield, the seat of Sir Titus Salt, Bart., I saw, a few days ago, the finest group of *Musa Cavendishii* I have ever been my good fortune to meet with. The house is some 60 to 80 feet square, with a bed raised some 4 feet high in the centre. In this the Musas are planted 6 feet apart, and so perfect are they in growth, that each plant is a fac-simile of its neighbour, and a specimen of perfect cultivation. Last year Mr. Nicoll, the gardener, informed me that the average weight of the various masses of fruit which he cut was 75 lbs., some weighing 78 lbs., others 73 lbs. This is a grand average, as 80 lbs. is outside weight. The loam in which the plants were growing seemed to be largely mixed with leaf-mould, and manure-water, I should say, had not been spared; but on these points perhaps Mr. Nicoll will enlighten me. Planting in raised beds, from an artistic point of view, is not to be commended, as the under-sides of the leaves only are seen. I should prefer sinking the bed below the ground-level, so that the plants might be looked down upon. Here a large house has to be heated, when one-half the height would be much more suitable for the purpose.—A.

FORESTS AND RAINFALL.

In a contemporary we read that "Forests are not only fertilisers, but also the irrigators and reservoirs of a country. In New England, and some parts of the West, farmers are planting trees to restore the fertility of the soil, and prevent the distressing droughts of summer. The history of the Isthmus of Suez has taught us a striking lesson in this respect. A few years ago, the whole region through which M. de Lesseps' famous canal now passes, was a sterile desert—the rainfall amounting often to less than an inch during the year. There were no trees to be seen far or near. When the energetic Frenchman began his gigantic enterprise, he at once directed thousands of trees to be planted in proper localities, they grew up, thanks to careful irrigation, and now the astonished eye of the traveller beholds blooming prairies and stately forests, where once all was waste and wild desert. But a still greater change has come over the climate; rain now falls frequently and abundantly, the soil produces richly; and if that man is to be counted a benefactor, who can make a blade of Grass to grow where none could be raised before, true glory belongs to him who has thus created, as it were, a fertile land, capable of maintaining thousands of industrious and happy citizens."

[On this subject, a friend, who has lately returned from a three years' residence in Egypt, informs us that the foregoing statement must be taken with much reservation, his own experience being that, during the entire period of his sojourn there, the number of rainy days was limited to three or four. The trees planted by M. de Lesseps along the banks of the Suez Canal, naturally thrive from their proximity to the water, but we are assured that the "blooming prairies and stately forests" above-mentioned exist only in the imagination of the writer.]

THE Australian papers contain accounts of the discovery of large quantities of "bat guano" in mountain caves in Victoria. According to the *Hampton Guardian*, "Samples of the deposit in question have been forwarded to Melbourne in more than one instance, and not only (as we are informed) has the analysis made by competent persons proved highly satisfactory, but the company have received from merchants in Melbourne, the offer of a considerable amount per ton by way of advance upon a consignment of guano equal to the samples sent down."

THE KITCHEN GARDEN.

CHICORY, OR SUCCORY.

THIS is a plant distributed over a vast portion of Europe and Asia, and quite common on our chalky soils in some counties. Although it is seldom seen in gardens, we think a few rows of it ought to be in every good garden, for the sake of the blanched leaves in winter. It is in this form used to a vast extent in Paris, under the name of *Barbe de Capucin*, and is a really excellent salad. For some tastes it may be too bitter, but the addition of a little Corn Salad or Beet root modifies this. It is as easily grown as any common weed; only, as, to obtain the creamy white salad in winter, we must take up the roots, it is better to sow it in rather open rich soil where it may grow vigorously and be easily taken up, and in drills 18 inches apart, thinning the plants to from 9 to 12 inches in the row. Some of our gardening authorities say the seed ought to be sown in June, but April is the best time. As to forcing it in winter and spring, nothing is required but to take the roots up carefully, and put them in some dark warm place, with a temperature of about 60°, in rough boxes, or directly on a bed. The French grow it on a large scale for market, and their system of growing it in caves or cellars on an extensive scale is not such as we should pursue, unless the plant should find its way into common use. Wherever Sea-kale, Rhubarb, or Asparagus is forced, its production should be a matter of no difficulty. It is sometimes used as what is called a small Salad, the seed being sown thickly in heat, and the leaves cut and used when very young and soft. It is in no great request by those who can produce fine Lettuce, Endive, Celery, Corn, and other small Salads in abundance; but for the amateur it is invaluable, on account of its easy culture and wholesome properties at a season when other good things are scarce.

JAMES BARNES.

NEW ZEALAND AND OTHER KINDS OF SPINACH.

UNTIL the introduction of the New Zealand Spinach, gardeners found it a difficult matter to provide a continual supply during the dry summer months with the common round Spinach, which is ever intent on running to seed. With the aid of the New Zealand variety, however,—which, properly speaking, is not a Spinach, though a most excellent substitute,—they can defy the hottest and driest seasons, which, in fact, are the most favourable to its development. The common summer or round Spinach is an excellent variety, but, being an annual, when sown after the beginning of April it goes to seed almost immediately under the highest cultivation, and affords but few gatherings, the leaves soon getting small and tough; hence the value of the New Zealand Spinach, which comes in shortly after midsummer, and a few plants afford an abundant supply of fine succulent leaves till the beginning of December, if frost is not very severe, when the prickly or winter Spinach will be ready for use. An ounce or two of good seed is sufficient for the largest establishment. The seeds are very hard, and it will hasten germination if they are steeped in water for twenty-four hours before sowing. Twelve 6-inch pots, with about six or eight good seeds in each, will be enough. They should be sown in light rich soil, and covered not more than half an inch deep. The pots may be set near the light, in any odd corner of a hothouse where the temperature ranges from 65° to 70°. If the seed is good and not old, it will vegetate in a week or little more, and, as soon as the seedlings have made their second leaves, they should be thinned out to six plants or less in a pot, and they may be moved into a lower temperature, say a greenhouse or cold pit, to harden off gradually before being planted out. This is generally done some time between the beginning and end of May, according to the locality. A border with a south or west aspect is the best situation for this Spinach, and is even necessary in cold districts. The border should be dug deeply, and about one or two barrow-loads of decayed hot-bed manure, or rough leaf-mould mixed with soil, should be laid down in a hillock for each plant in the centre of the border, and about 6 feet from each other. One pot should be planted in the centre of each heap, taking care not to disturb the ball of the

plants in turning them out of the pots, and they should be covered with hand-light tops set on three bricks until the plants are established, when they may be removed. The plants should be watered liberally in dry weather, and they will soon cover the ground. In the course of the season, one plant will sometimes cover 40 or 50 square feet of space.

The New Zealand Spinach with us always carries the supply on until the prickly or winter variety comes in. The time to sow this depends upon the locality. If sown too soon, it runs to seed the same season and is useless. To sow it late enough to have a crop of leaves without the plants throwing up their flowering stems is what has to be aimed at, and for this reason many sow twice for the winter crops. In some parts of Scotland and the north of England the middle of August is not too soon, while in the south it is not often safe to sow before the end of September; but a practical acquaintance with the climate and locality will generally be the best guide. This crop is often sown after Potatoes or Onions. The ground should be dug deeply and well manured, the seed should be sown in shallow drills, 18 inches apart, and the plants must be thinned out afterwards to 2 inches asunder. The winter crop will generally afford a good supply of leaves till near the beginning of June, by which time the round or summer Spinach will be coming in in abundance. It requires the same treatment as the winter variety. We generally sow it between the rows of the first and second sowings of Peas, and this keeps up the supply until the New Zealand Spinach is ready after Midsummer. Some care is required in picking Spinach, especially in winter, when the growth is often not equal to the demand. Indiscriminate picking will soon ruin the crop; the largest leaves should therefore be taken first, and picked off singly, so as to avoid otherwise injuring the plants. In addition to the above directions, I need hardly say that it is at all times beneficial to keep the ground stirred between the rows of the summer and winter varieties, and to keep an eye on weeds, which should be destroyed as soon as they make their appearance.

J. S. W.

MY GARDEN MARKER.

This is a contrivance which I have used with some satisfaction for the purpose of laying off the ground for planting in drills, or for making holes in which to set Winter Greens, Tomatoes, &c. It will be seen that it makes a row, and that it also makes holes at certain distances apart, so that Peas, Beans, &c., may be planted 6, 9, or 12 inches apart, as the case may be. If the wheel is 1 foot in diameter, the holes will be 9 inches apart. If it is 2 feet in diameter, there may be eight pegs used instead of four, and marking holes 9 inches apart. Cabbage may be set out in such holes by missing every alternate one, which will bring the plants 18 inches from each other.

J. D., in "*Tribune*."

COMMON CHERVIL.

This graceful little plant is cultivated to a large extent in continental gardens, and also in our own. It is a native of south-eastern Europe, an annual, and requires a little more trouble to have in perfection than perennial herbs. It and all the annual kinds of herbs, &c., should be grown together for convenience sake, and it should be sown in succession from the end of February till September, if a constant supply is wanted. In the market gardens of Paris this plant is grown to great perfection on the light, very rich, and well-watered soil common to those places. It is often sown among other crops, and pulled and used before the others require all the ground. It may be sown broadcast and raked in, or in shallow drills about 8 inches apart, and very lightly covered. There is no occasion to sow it in a shady situation in summer, provided the soil be light and deep, and not such as will harden and crack up with a few days' strong sun. The curled

or Parsley-leaved variety is the prettiest, and in many large families it is as much sought after for soups and salads for every day in the year as Parsley. To cultivate it well for a daily supply it requires, as with other things, a little method and forethought. Grow the pretty Fern-leaved curled variety in a rich, open, well-pulverised soil. For standing the winter, choose a warm sheltered south or south-west aspect or corner, about the 12th or 15th of September, sow broadcast thinly or in drills, which should be 8 or 9 inches apart, and thin the plants to 5 or 6 inches asunder in the rows; make another sowing on the same aspect the first week in October, thus securing a winter and early spring supply. This time sow thicker and thin less; and, in order to have a portion unaffected by snow or severe frost and easily obtained at all times, give it some temporary protection, such as a shallow frame, consisting of four boards nailed together and covered with old lights, canvas, well-oiled thick paper, or thatched neatly with clean straight straw, evergreen boughs, Fern, or any material of that kind. Sow again in boxes or pots in January, and place them in gentle heat; and make another sowing in February on a warm border. Sow also in April, and during the next three months, a row here and there between Raspberries, Gooseberries, or other bush fruit, for the sake of partial shade, or on a north border or cold damp bottom—thus a plentiful supply of luxuriant, good-coloured Chervil may be had every day in the year. Large quantities of this herb may always be seen in the Paris markets; and there is much more of it now in Covent Garden than there used to be fifty years ago.

JAMES BARNES.

Street Manure.—London at the present time furnishes very little valuable scavage; but fifty years ago and upwards the scavage of London and other cities was much sought after by market gardeners. The various health and towns' improvement Acts during the last thirty years have led to vast changes, and our leading thoroughfares, at least, are better looked after. Since the advent of the asphalt pavement, horse and cattle "droppings" in the City are specially attended to. We can, however, picture to ourselves what the streets of London were a hundred years ago. Miller, in his "*Gardeners' Dictionary*," writes—"There is not any sort of manure equal to the cleansing of London streets for all stubborn clayey soils, which will be better separated, and in much less time, with this manure than any compost whatever, and it is extremely well worth procuring for grass or garden land." The ashes of pit coal and the soot of the same coal were also recommended for their special qualities, which they are still credited with and possess, to a certain degree, according to the circumstances of their use.

Cucumber Disease.—I enclose you parts of a Cucumber plant for inspection. I have been troubled very much this season to get both Cucumbers and Melons to grow. The latter succeed very well at first, set their fruit, and then the leaves become spotted, the fruit gets gummy, and, of course, useless. Cucumbers are the same; even the common Ridge ones were quite killed after they were planted out, and the Vegetable Marrows were attacked in the same manner; all the first fruits were spotted and bad, now they appear to have outgrown the disease. Can you afford me any information on the subject?—A. B. C. [Your Cucumbers are suffering from what is termed chlorosis, a disease arising from the absence of chlorophyl, the substance which gives colour to the leaves. The cause it is difficult to discover; but we know that rich soils and rich manures have a tendency to increase it. The best remedy or preventive will be found to be pure simple loam and steady forcing. I have battled with the disease for 40 years, and in scores of experiments have been unable to discover any certain specific.—W. P. A.]

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Potato Disease.—The haulm of my Potatoes is struck down with disease. What had best be done with it?—AJAX. [Cut it off close to the ground. By this means you may preserve the tubers sound; though they will not increase in size after the haulm is removed, they will, however, ripen perfectly, which process commences immediately upon their being deprived of the haulm.]

A Large Cucumber.—We have received from Mr. Gibbs, of Ryde, one of the largest Cucumbers we have seen. It is 35 inches long, and weighs 5 lbs. 15 ozs. We only know of one larger Cucumber, and that was a specimen of Volunteer, grown by Mr. Hamilton, at Botcherly. It weighed 7½ lbs., and was 39 inches long. Hamilton grew several 33 and 34 inches long, and weighing about 5 lbs.—*Field*.

THE PROPAGATOR.

PROPAGATING CENTAUREAS.

AMONGST white-foliaged plants for flower-garden decoration Centaureas are unrivalled. No matter how hot and dry the weather may be, they still retain their freshness—in fact, a dry season suits them best, especially when planted early enough to enable them to get a firm hold of the soil before hot weather sets in. I frequently hear some of my gardening friends remark that they sometimes have a difficulty in getting up a sufficient stock of Centaureas, one of the reasons of which may be that spring-struck plants do not produce cuttings so freely, and with a base sufficiently firm to root readily and resist damp early in the autumn. Years ago, when I had to prepare a large annual stock of these plants, I always in autumn potted up from the beds above 200 of the smallest of the plants, reduced their roots and foliage, potted them into 48-sized pots, and they were kept in a cold pit all the winter. In the spring, if the stock propagated in autumn was insufficient, a few of the plants would be headed down and placed in heat for cuttings; but the majority of them were left untouched, and were used for centres of beds or back rows in ribbon borders, or any other position in which large plants were desirable. From the end of August to the end of September I consider the best time to strike Centaureas; and, when a hundred or two of the previous year's plants have been saved through the winter in the way I have stated, there is no difficulty in getting thousands of cuttings that will root readily in a cool pit. Sandy loam mixed with a fourth of its bulk of leaf-mould makes the best compost, although in this respect Centaureas are not at all particular. We use 48-sized pots well drained, and having the soil pressed in firmly, with about a quarter of an inch of clean silver sand on the top. The pots are well watered about an hour before they are required for use, to give them time to settle and drain. Ten cuttings are dibbled into each pot; they are again watered lightly just to settle the sand round the cuttings. Four small sticks are placed round the inside of each pot, and a little string of bast or some tying material is passed round just to keep the leaves in an upright position. They are then placed in a cool pit, and kept close during the day time, and shaded if necessary to keep up the foliage, but ventilation is always given freely at night. Treated in this way we do not find any difficulty in rooting any number of cuttings we may require in the autumn. In a place where large numbers of more tender plants are required for summer decoration, there is always a great pressure in the propagating department in spring, and it is not wise to defer till that season what can be better done in the autumn. They cost nothing in fuel and very little in attention through the winter, and they may be planted out early, and the pots used again for other plants. I have sometimes dibbled the cuttings into a bed of prepared soil in a cold pit, and wintered them in the same way as Calceolarias; but on the whole I prefer putting the cuttings into pots. They are more manageable, and if damp should attack them they are easily moved out, and a few dry ashes scattered about soon puts matters right again. In making the cuttings, it is best to have an inch or so of firm wood at the bottom, and the moderately small and wiry-looking side shoots from old plants make the best cuttings. The roots of Centaureas are exceedingly brittle, therefore pot the cuttings off early in February into small single pots. If not planted out finally in April, they may at least be altogether exposed. They are nearly hardy; in fact, they stood out unprotected here all last winter. In the majority of seasons a few dry leaves placed round them would save them.

E. H.

Vegetable Physiology.—Professor Joseph Bohm has communicated to the Academy of Sciences of Vienna some curious and interesting observations on vegetable physiology. He has found that young plants produced from seeds germinating in pure oxygen gas of ordinary density speedily die, although they continue to consume oxygen to as great an extent as when they are growing in atmospheric air. The young plants thrive, however, in pure oxygen when the density of the latter is reduced so as to represent only a pressure of about 6 inches of mercury, or when pure oxygen of ordinary density is mixed with four-fifths of its volume of hydrogen. Professor Bohm has also investigated the action of carbon upon the growth and greenness of plants, and found that an intermixture of only 2 per cent. of carbonic acid in the air in which plants are growing suffices to retard the formation of green colouring matter (chlorophyll), and that the process is almost or entirely suppressed in an atmosphere containing 20 per cent. of this gas. No germination of seeds took place in an atmosphere consisting of one-half carbonic acid.

A BEGINNING.

EVERYBODY knows that American Plants are far better grown in England than in America. But here and there, in the neighbourhood of Boston and other large cities, wealthy American amateurs are now making good collections, mostly direct importations from Surrey. Among these collectors, perhaps, the best known is Mr. Hunnewell, of Wellesley, whose charming place in Massachusetts we had the pleasure of seeing in 1870. This gentleman has, as we learn from *Hearth and Home*, inaugurated in Boston, the capital of New England, with much public spirit and success, shows of American plants, arranged as they are in old England:—

A marked instance of a man possessing wealth and knowing how to use it is Mr. H. H. Hunnewell, essentially a Bostonian, although his residence is at Wellesley, some miles distant from the city. His modest nature would shrink from a public notice of this kind, but there are so many men of abundant means that can only be held up as a warning, we trust that he will pardon our making use of him as an example. Mr. Hunnewell's place is widely known as the finest in the country, and its gates are freely open that all may enjoy the beauties upon which he has expended so much money, and—what is far more to the purpose—so much care and personal supervision. But our purpose is not at present with Wellesley, but the Rhododendron show. Rhododendrons are a feature in the planting at Wellesley, and nowhere in the country can there be found so great a variety and such choice specimens of these beautiful plants. Last year Mr. Hunnewell conceived the idea of making an exhibition in Boston in order that the many who could not visit his grounds might enjoy the floral display. His plans were presented to the Massachusetts Horticultural Society and accepted, and a committee appointed to co-operate with the projector to carry out the details of the exhibition. After untying a vast amount of red tape, permission was obtained from the city authorities for the use of a location on the Common, and preparations were commenced some two weeks before the show opened. The exhibition was to be upon the English plan, and one not before carried out in this country—that is to form the ground into a well-arranged garden, in which the specimens are planted out instead of being shown in the usual way in pots, set in formal rows upon tables and benches. This involved changing the surface of the ground so that it might present those graceful undulations that would allow of the best display of the specimens. The ground was inclosed by an enormous tent, or rather two or three tents united, gas and water pipes laid, edgings turfed, and all laid out in the most tasteful manner. An immense amount of work was expended, and great expense incurred before a single plant was put in place. The Rhododendrons, except a single specimen, were all from Mr. Hunnewell's own grounds, some of them plants of great rarity and of almost priceless value. The specimens were taken up with balls of earth and loaded in the afternoon. The journey to the city was made during the night, and they arrived at the tent by sunrise, and were placed in groups, masses, or as single specimens as their size or rarity demanded. All this taking up was personally attended to by Mr. Hunnewell. But there had to be at the tent one equally interested in the matter to receive the plants and see to their proper planting. This duty was assumed by Prof. Charles S. Sargent of the Bussey Institute, another gentleman who illustrates our statement that Boston has numerous men of abundant means who are enthusiastically devoted to horticulture. Prof. Sargent gave his whole time and energies to the work; and it is to these two, Messrs. Hunnewell and Sargent, that the public is indebted for the finest floral display ever seen in this country. The entrance avenue to the Rhododendron show—also covered by a tent—contained many fine Palms, Tree-Ferns, and other rare plants contributed by the gentlemen we have named and other cultivators.

The general view of the tent is one long to be remembered. The choicest and rarest Rhododendrons were there by hundreds, if not by thousands; and while the *coup d'œil* was grand beyond description, the particular inspection of individual specimens was not the less gratifying. Those who saw the show in its arrangement and grouping, its brilliant contrasts of colour and general gardenesque effect, will hardly be satisfied hereafter with the old plan of showing plants upon tables. But it is not our purpose to describe the plants, it is rather to speak of the show as a whole, and especially the manner in which it was made possible. The whole expense of the exhibition—aside from the risk of the plants—was between 5,000 and 10,000 dollars. This was all assumed by Mr. Hunnewell; who besides stripping his own grounds of their choicest plants, and taking the risk of injury in transit and otherwise, took also the whole pecuniary risk. The matter was placed under the auspices of the Horticultural Society under a most generous arrangement. If any surplus was

left after paying expenses it went to the society, but if there were any deficit that went to Mr. Hunnewell. Intended for the gratification of the community, but a small admission fee—just enough to keep out roughs and idle persons—was charged. Then with true liberality the children of the public schools, the inmates of the various public and private charitable institutions—indeed, all who were worthy and needy, were invited to get a glimpse of fairyland. The cost of this exhibition may be counted up in dollars and cents, but who shall sum up the credit side. We know what pleasure it gave to those to whom fine plants are no novelty; but to the young, the poor, the unfortunate, what a cheering blessing this must have been! Would we could hope that examples of this kind might be contagious. Is there no man of wealth in New York who could find pleasure in doing something of this kind for our much more needy community?

WORK FOR THE WEEK.

PRIVATE GARDENS.

Conservatories.—To soft-wooded plants in flower, pure water only should be given; but to such as are making growth, occasional applications of manure-water may be given. *Lapagerias*, both red and white, are now in great beauty, as are also *Passion-flowers* and *Fuchsias* on trellises. Lilies placed amongst the green masses of *Camellias*, *Azaleas*, *Acacias*, &c., have a pleasing effect, and few plants can be more charming for fronts of borders than *Hydrangea paniculata*, *Agapanthus umbellatus*, *Vallota purpurea*, *Trachelium caruleum*, and *Plumbago capensis*. Keep up a good succession of *Gomphrena globosa*, *Balsams*, *Cockscombs* and other *Celosias*, *Rodanthe Manglesi*, *Begonias*, *Petunias*, *Heliotropes*, *Achimenes*, *Fuchsias*, *Pelargoniums*, *Asters*, *Schizanthuses*, *Zinnias*, *Coleuses*, and others. Remove plants, the beauty of which is over, to frames; in the case of tall straggling plants, however, it may be more desirable to save cuttings of them than to preserve the old plants through the winter. Annuals may be consigned to the rubbish-heap as soon as their flowers become faded, unless seed-saving is an object. See to repairs in the way of glazing and painting, and put everything in good order before winter sets in.

Greenhouses.—The general stock of hard-wooded plants such as *Coronillas*, *Cytisuses*, *Henths*, and *Azaleas*, must be freely exposed, if in frames, to atmospheric influences, but if out of doors they should be screened from strong sunshine by plunging the pots in Cocoa-nut fibre or ashes, and by laying the pots on their sides in the event of heavy rain-falls. The earliest started *Fuchsias* if now cut back, rested, re-potted, and started into growth, make fine late-blooming plants, but young plants are preferable. Transfer a few Lilies to a house with a north and cold aspect so as to keep them as late as possible in coming into bloom. The earliest ones should now be kept quite dry and in a cool shady place, and succession ones just moist enough to prevent the leaves from shrivelling until the stalks turn yellow, when the bulbs may be kept altogether dry. Of *Amarantuses* have a good stock, as they are very effective mixed amongst flowering or white-leaved foliage plants, such as *Centaureas*. *A. salicifolius* will now be at its best, and, in order to maintain a good brilliant colour in the leaves, keep the plants near the glass and in an airy position; a little peat put into the soil in which they are growing serves to increase brilliancy of colour in *Amarantuses*, *Coleuses*, *Iresines*, *Alternantheras*, and similar plants. Be very careful in watering plants of *Gomphrena globosa*; for they are apt to damp off quite suddenly at the neck and to become useless; a little charcoal dust placed around the base of the stem has been found to be a good preventive of this malady. Permit the earliest started hybrid *Begonias* to go gradually to rest, for although they might continue to flower for a short time, yet their habit would be of such a loose and straggling character that young plants would be vastly superior to them. Sow *Cyclamens* in a very gentle temperature, and light soil, for, by sowing now, excellent flowering plants will be obtained when the seedlings are fifteen months old. Attend to the pricking off and potting of *Calceolarias*, *Cinerarias*, and Chinese *Primulas*, and pot *Auriculas* and place them in a frame with a northern aspect. Graft a few *Epiphyllums* on *Pereskia* stocks, and propagate a few of the latter by means of cuttings. Unfasten the ligatures of *Camellias* and *Azaleas* that have "taken," and re-pot the plants as soon as practicable.

Stoves.—Fine foliage is now more predominant than flowers, therefore the plants should be arranged accordingly, giving a light and prominent position to highly-coloured plants. Syringe every fine day, water plentifully but moderately, and shade thinly from strong sunshine. Pot singly young *Gloxinias* raised from cuttings made of the leaves, or seedlings, and gradually dry off those that have done blooming. Such plants of *Achimenes* as are exhausted place on a dry shelf and keep them pretty dry. Some *Eranthemums*, *Gymnostachyum*s, *Sonerilas*, *Cyrtodeiras*, *Bertolonias*, &c., if

rooted at their several joints, may be separated, and each division to which roots are attached, potted singly. *Euphorbia jacquiniæ-flora* and *Poinsettia pulcherrima* should have a position close to the glass in a moderately warm place. Encourage the growth of *Gesneras* of the *Exoniensis* section; they make fine blooming and ornamental plants from October throughout the winter. Plants of *Clerodendrons* of the *Kämpferi* and *Fallax* section must be stored away in some dry place.

Window Plants.—Remove show *Pelargoniums* and other plants that have done blooming, and always endeavour to have good healthy foliage if flowers are scarce. The Ivy-leaved *Pelargoniums* are the best of all window plants; display them to advantage, and pick off seeds of decaying leaves from *Tropæolums*. *Balsams* and *Asters* are now very pretty in windows, as are also some plants of *Tagetes* and African *Marigolds*. Give plenty of water to plants of *Creeping Jenny*, and permit the shoots of the *Virginian Creeper* to droop in graceful festoons. Re-pot old roots of *Cyclamen persicum*, and place them in a moderately warm and shaded corner. Introduce a few *Cockscombs*, yellow *Calceolarias*, *Grasses*, and any other miscellaneous plants obtainable. Indeed, a very pretty ornament in the window is the Japanese Maize grown in pots. *Mesembryanthemums*, too, are very useful for a dry position, and *Gazania splendens* for a sunny one. There are few better plants for window use than the hybrid *Clematises*, and, whether planted in a border, box, or pot, they bloom long and freely, and are very showy. The *Myrsiphyllum asparagoides*, a plant much used for window decoration in America, is now in splendid bloom, and is a grand plant which requires but little care. The various small-leaved *Ivies*, too, should not be forgotten; they are useful for suspended baskets, screens, or for spreading over balconies, and they grow and thrive under even adverse circumstances. Ferns and *Selaginellas* are also, as everybody knows, excellent for windows, especially for those facing the north or east; and for windows facing the brightest sunshine, *Acacia Lophantha* and other kinds of *Acacia*, some sorts of *Asparagus*, *Convolvulus Mauritanicus*, *Grasses*, and other plants of that sort are suitable.

Hardy Fruit and Kitchen Garden.—Gathering fruit as it ripens is now an important point, and requires great attention. They must not be gathered when wet, nor during hot sunny weather, and they must be handled very gently. In the case of early Pears, it is not well to leave them on the trees until they are quite ripe; as a rule, they should be gathered a day or two before they are in that condition, otherwise they are apt to become dry and rotten at the core. The choicest wall fruits should be protected from wasps, birds, and flies, with elastic hexagon netting or other material of that kind. Remove all unnecessary lateral growths, and expose the fruits as freely as possible, particularly the dessert sorts. Root-prune gross-growing unfruitful trees now, and lift them if need be in November. By this means the roots will make young fibres whilst there is heat in the soil, and suffer less when they come to be finally lifted than they otherwise would do. Make Strawberry plantations from early stopped runners. These will bear a good crop next spring, whereas if left until later in autumn or until spring before they are planted, they will not bear a good crop until the succeeding season.

Kitchen Garden.—Thin and keep clean all seedling Cabbages; and, if time and space can be spared to prick them out some time before planting, it will greatly strengthen the plants. Transplant Cock's Hardy Green Coleworts as soon as the plants are large enough, and fill up every space with the remainder of the Rosette sort. Sow Cauliflower out of doors, to be afterwards pricked out in a frame, or retain the seed until the 1st of October, when it should be sown on a gentle hot-bed. Earth up advancing crops of the Cabbage tribe. Continue to plant out Lettuces and Endive, the latter on the warmest positions, and where water is not likely to stagnate. Tie up both some days before they are ready for use, and discard any that are running to seed. Attend to the timely earthing up of Celery, and liberally feed growing plants. Tie and earth up Cardoons in dry weather. Sow American Red Stone, White Stone, and Strap-leaved Turnips on Potatoe ground, and hoe and thin previous sowings, always using the most advanced roots first. Sow Radishes according to the demand in a warm position; the early autumn sowings generally yield first-rate produce. Sow some Spinach for spring use, and also some early Horn Carrots on a warm border for the same purpose. Harvest Onions as soon as they are ripe, using for present consumption the thick-necked ones, and retaining for winter purposes only the best ripened and most solid ones. Earth up Leeks as they grow. Clear away exhausted crops of French Beans and sow some in a frame for a late supply. Never permit the fruit to get too old before being gathered unless seed-saving is an object. The plantations of Globe Artichokes made last spring will now be in good bearing condition, and by supplying water freely

their season of fruiting may be considerably prolonged. Remove the flower-stems from older plants as soon as the produce is cut. Endeavour to assist the ripening of Tomatoes by placing sashes in front of them; even hurdles and mats set up before them at night have a beneficial effect. Pinch off all useless laterals and leaves so as to give more light and air to the fruit than it had when growing. Vegetable Marrows must be kept in vigorous health by cutting out all decaying shoots and leaves, giving abundant waterings, and constant cutting off the fruit. Mildew soon takes Marrows and Peas unless they are liberally supplied with water at this season. Lift Potatoes as they become ripe, and dry such as are required for "sets" next year. Make occasional sowings of Mustard, Cress, Corn Salad, Chervil, and other small saladings.

VIENNA EXHIBITION AWARDS.

MESSRS. J. B. BROWN & Co., 90, Cannon Street, London, have been awarded "the medal of merit" for their galvanised wire netting, shown at Vienna. This medal is awarded for "excellence and perfection in material and workmanship, and cheapness of production."

To Messrs. James Carter & Co., High Holborn, was awarded "the medal for progress" for a "unique collection of Grasses, Grass seeds, roots, models, farm, vegetable, and flower seeds."

To Messrs. Sutton, Reading, has also been awarded a similar medal "for their collection of Grasses, Grass, vegetable, flower, and farm seeds."

This "medal for progress" is given for productions which, compared with those of previous exhibitions, show noticeable progress in the introduction of new material.

KEEPING FRUITS AND VEGETABLES BY THE AID OF ICE.

At this time of the year such things as Peaches, Nectarines, Melons, and Pine Apples often come in much faster than they can be used. When this is the case, I find it an excellent plan to resort to the ice house or refrigerator. Pines will keep nearly a month, and some kinds longer, if removed, pots and all, to the fruit room when just about quite ripe; and the period may be much prolonged if they are removed to the ice house before decay sets in. I lay them upon cotton, in tin boxes (biscuit boxes will do) without any packing about them, shut down the lid, and set the boxes on the ice, not buried in it. Peaches I have kept quite a month in this way after they were dead ripe, and Nectarines six weeks. I place them in shallow tin boxes, putting a piece of cotton between the fruits, but otherwise leaving them uncovered. After they have been long on the ice they should not be brought out long before they are used, as they do not keep long afterwards without showing specks. Tender-fleshed Melons, that will not keep a week in the fruit room in summer, will keep three or four weeks in the ice house. At town houses, where the fruit for dessert is received in large quantities from the country a difficulty is often experienced in keeping it till wanted; but, if systematic arrangements were made for storing it in the ice bins, there need be no trouble in this respect. In the matter of vegetables, there is not a more serviceable storehouse than the ice house. Not unfrequently Cauliflowers come in with a rush, leaving a blank in the succession; when this happens they should be cut with a short stem and a few leaves and set on the ice, but not heaped one above another. Cucumbers will keep a very long time, and I have known the autumn and winter supply greatly prolonged by storing them away in boxes in the same way as fruit. French Beans should be packed in bundles and set on their ends in boxes. I am sure those who try the plan once will resort to it again. J. S., in Field.

Keeping Apples.—One of my neighbours is an enthusiast in Apple growing. His farm of 50 acres, with the exception of about 10 acres in pasture, is covered with Apple trees of various sizes and ages, though a majority of them are now in bearing. One of his theories is not to use any animal manure around or near his trees, but to depend wholly upon vegetable manure in the form of mulching. He defends this position upon the ground that the one is the natural method and the other artificial—the latter tending to decay, and the former to health. He kept 1,200 bushels of Apples, mostly Baldwins, through the past winter and spring in his cellar. He says by his mode Apples may be kept the year round, without losing their juiciness or crispness; and his method should be understood by every orchardist. His theory is that the early rotting and decay of Apples is due, to a great extent, to a vegetable miasma in the air, which is communicated to it by vegetable evaporation under certain conditions. The effect of this miasma is first seen in a minute speck; sometimes as many as a dozen may be counted on the same

Apple. His remedy is a daily airing of the cellar or place where the Apples are stored, arranging so as to have a brisk circulation until all the stagnant air is expelled, and its place occupied by pure, healthy air. His success has certainly demonstrated the feasibility of his plan. He is one of our most successful Apple growers, and his views are worthy of consideration.—*Cultivator*.

A good Suggestion.—The endless variety of vegetable and floral denizens of our gardens, each having peculiar wants and preferences, makes it impracticable to include in one book full directions for their individual culture. As they agree in many of their needs, or at least agree in large classes, how would it do to tell us merely what not to do in each case, what they do not like, and what they will not submit to? Would not it be the shorter way? Complimenting a friend one day, who is a good gardener, by telling him that he evidently knew what to do for his plants, another friend suggested that it was rather his knowledge of what not to do, for he let his plants have large liberty and was by no means oppressively good to them. Do not we fail oftener through unwittingly doing what is disagreeable to plants, than by failing to attend to what we know they require? And would not a list of forbidden steps be shorter than the lists of requisite ones? Perhaps not. A German satirist, in commenting on the endlessness of the lists of ordinances of some of the law-burdened petty states of his country, suggested that it would be best to codify all exceptions in one paragraph, as "all that is not expressly allowed is forbidden." Still, it would be a useful undertaking for some one to give us the forbidden list in regard to each plant as well as the allowable. And it would not be a voluminous one, for plants do not stray into such diversities of wrong-doing as we, lords of creation, do.—*American Paper*.

Artificial Rain.—A short time since a company of gentlemen, interested in cultural development, met at Stoke Park, near Slough, in order to inspect Mr. Isaac Brown's novel system of shower irrigation applied to pasture. Mr. Brown is connected with the British River Irrigation Company, India Buildings, Edinburgh. His process consists in forcing water through small perforations in lead pipes, by means of a powerful force pump. The lead pipes are laid down 16 yards apart; a 12-horse power engine works one of Tangye's force pumps. With a pressure of 60 to 70 lbs. per square inch, or a head of 120 or more feet, the engine maintains a shower upon a plot of about an acre and a half, applying 10 tons of water in 15 minutes. Plot after plot is watered in rotation, the work taking place principally in the night. Six acres parted off for the present experiment were dressed with 5 cwt. per acre of the patentee's artificial manure, and then watered; the Grass, where only a fortnight old, being in beautiful condition.

COVENT GARDEN MARKET.

August 29th.

Flowers.—Among these Asters form the chief feature, and they are particularly well grown; for each plant in a 48-sized pot is furnished with from six to nine blooms. Oleanders, too, though only about a foot in height, are each surmounted by one or two spikes of beautifully-developed flowers. *Solanum capsicastrum*, covered with brilliant scarlet berries, has just made its appearance, and there are still plenty of *Hydrangea paniculata grandiflora*, which seems to be a favourite with most people. *Gladioli*, *Japan Lilies*, *Vallota*, *Begonia Weltoniensis*, *Bouvardia jasminiflora*, *Pelargoniums*, *Fuchsias*, and a various assortment of dwarf evergreens, little conifers, *Dracenas*, *Ferns*, and *Selaginellas*, are also equal to the demand. Cut flowers consist of late kinds of *Roses*, a few *Orchids*, and blooms of other plants.

Fruit.—Of this there is a large supply, and prices for it have consequently declined; indeed, *Plums*, which last year fetched 20s., can be bought this season for 4s.; and *Apples*, which fetched 12s. last year, only realise 2s. 6d. this season. *Williams's Bon Chrétien* and *Jargonelle* are amongst the best *Pears* at present in the market, and among *Plums* the *Victoria* is the most plentiful. *Peaches* are large and fine, and *Figs* are supplied in moderate quantities. *Tomatoes* are now coming in from the open air, and *Cucumbers* are very plentiful, but in many cases only of moderately good quality.

Vegetables.—*Coleworts* are being supplied in large quantities, as are also *Lettuces*, *Turnips*, *Onions* and *Vegetable Marrows*. The supply of *French Beans* and *Scarlet Runners* is very large. *Celery* and *Endive* are also now abundant.

Prices of Fruits.—*Apples*, per half-sieve, 1s. to 1s. 6d.; *Apricots*, 2s. to 4s. per doz.; *Cherries*, per lb., 6d. to 1s. 6d.; *Chillies*, per 100, 2s.; *Currants*, per sieve, 3s. 6d. to 6s.; *Figs*, per doz., 1s. to 3s.; *Grapes*, hothouse, black, per lb., 1s. 6d. to 3s. 6d.; *Muscats*, 2s. to 6s.; *Lemons*, per 100, 10s. to 18s.; *Melons*, each, 2s. to 4s.; *Nectarines*, per doz., 4s. to 8s.; *Oranges*, per 100, 12s. to 24s.; *Peaches*, per doz., 8s. to 12s.; *Pears*, per doz., 2s. to 4s.; *Pine Apples*, per lb., 3s. to 6s.; *Raspberries*, per lb., 4d. to 1s.; *Tomatoes*, per doz., 1s. to 2s.; *Walnuts*, per bushel, 20s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—*Artichokes*, per doz., 3s. to 6s.; *Beans*, *Kidney*, per half sieve, 2s. to 3s.; *Beet*, *Red*, per doz., 1s. to 2s.; *Cabbage*, per doz., 2s.; *Carrots*, per bunch, 4d. to 8d.; *Cauliflower*, per doz., 3s. to 6s.; *Celery*, per bundle, 1s. 6d. to 2s.; *Coleworts*, per doz. bunches, 4s.; *Cucumbers*, each, 3d. to 6d.; *Endive*, per doz., 2s.; *Fennel*, per bunch, 3d.; *Garlic*, per lb., 6d.; *Herbs*, per bunch, 3d.; *Horse-radish*, per bundle, 3s. to 4s.; *Leeks*, per bunch, 4d.; *Lettuces*, per doz. 1s. to 2s.; *Mushrooms*, per pottle, 2s. to 3s.; *Mustard* and *Cress*, per punnet, 2d.; *Onions*, per bushel, 4s. to 6s.; *Button*, per quart, 8d.; *Parsley*, per doz. bunches, 4s.; *Parsnips*, per doz., 9d. to 1s.; *Peas*, per quart, 9d. to 1s.; *Potatoes*, per bushel, 3s. 6d. to 5s.; *Radishes*, per doz. bunches, 1s. to 1s. 6d.; *Rhubarb*, per bundle, 8d. to 1s.; *Salsify*, do., 1s. to 1s. 6d.; *Scorzoneria*, per bundle, 1s.; *Shallots*, per lb., 6d.; *Spinach*, per bushel, 3s.; *Turnips*, 4d. to 8d.; *Vegetable Marrows*, per doz., 1s. to 2s.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

THE FRENCH TAMARISK TREE.

(*TAMARIX GALLICA*).

By JAMES M'NAB, Botanic Gardens, Edinburgh.

This suffruticose plant is grown in considerable quantities in many of the villa gardens round the southern shores of England, and, owing to its abundance in such districts, it is frequently seen in a very rough condition. In many outlying places it has become quite naturalised, but whether truly indigenous or not it is difficult to say. The *Tamarix* has, however, taken a place in the British Flora, and may now be regarded as a native. In this part of Scotland it is a plant rather difficult to cultivate, and therefore rarely seen in our gardens, and when seen it is generally of a feeble habit of growth, and easily injured by cold, the wood not being sufficiently ripened during the summer to withstand damp low temperatures.

A short time ago I was at North Berwick, a famous sea-port town on the east coast of Scotland, much resorted to by bathers from all districts of the country, not only for the excellence of its waters, which flow directly in from the German Ocean, but for the admirable sea views to be obtained there. The inland country is also beautifully studded with the residences of many noble families, surrounded by well-laid-out gardens and extensive ornamental grounds. In the immediate neighbourhood of North Berwick many fine architectural villas have recently been erected, and in most cases the gardens surrounding them are admirably kept; others again, as in most marine towns, are left in the wildest condition. This may be accounted for from the number of children generally brought to such places. Most of the garden adornments are those usually to be seen in such sea-side residences, viz., *Fuchsia Riccartoni*, *Sea Buckthorn* (*Hippophaë rhamnoides*) *Veronica Andersoni*, and *V. speciosa*, *Hibiscus syriacus*, *Spartium junceum*, *Buddleia globosa*, *Cotoneaster microphylla*, also *Honeysuckle*, *Ivy*, and white *Jessamine*. In one of these villa gardens, belonging to Seaton Lodge, the property of F. C. Seaton, Esq., I was surprised to see no less than sixteen fine cylindrically-shaped plants of the *Tamarix gallica*, or French Tamarisk tree, all standing singly on a grass lawn in front of the house. These have been fifteen years in their present position, and were placed there by Mr. Paul, the gardener in charge of the Seaton Lodge grounds. Mr. Paul informed me that the soil in which they are planted is naturally of a sandy nature, but is freely mixed with good loam. The plants are each 6 feet high, and have been kept at this height for many years. Each plant is tied to a strong green stake, and the branches are carefully cut in every season, so as to retain their prescribed height and cylindrical form. Covered with light sea-green Cypress-like leaves, they certainly are most effective and pleasing to the eye, more so than I have been accustomed to see them in southern gardens, where the foliage is much darker, from the drier and warmer nature of the climate.

One remarkable circumstance connected with the *Tamarix* at North Berwick is that it is not seen in any other villa garden, although Mr. Paul has the superintendence of several in the district, nor have I seen it in gardens connected with any other sea-port town in the east of Scotland, although it can be freely propagated by cuttings, if stuck into any shady part of the garden under the shelter of a wall. Seaton Lodge is partially sheltered from the direct sea breeze by a hedge of *Ivy* and *Buckthorn*, which is generally kept about 4 feet high. The position of the plants is about 10 or 12 feet above high-water level, and 45 feet back from the sea during high tides. Several other half-hardy exotics are also to be seen in Seaton Lodge grounds, such as large *Myrtles*, covered with bloom; *Aloysia citriodora*, about 14 feet high, also covered with flowers, both plants being

trained on a wall having a southern aspect. Two plants of *Escallonia macrantha*, a native of Chiloe, are now standing in the middle of the garden, profusely covered with red flowers. They seem to be annually cut in with the knife to keep them in a bush form—a process which may probably help them to stand our winters. The largest of these plants is 4 feet high and 19 feet in circumference—a size not uncommon on the west coast of Scotland, but quite unprecedented, as far as I know, on the east coast, showing the importance of trying every plant possible in sheltered villa gardens near the sea, where the climate is generally milder and more uniform than in inland districts. Mr. Seaton's garden is also celebrated in the neighbourhood for the gaiety of its bedding-out plants, every available space being made use of. This is a system of ornamentation, however, which I would not recommend for any residence where the family remain all the year round.

MANCHESTER INTERNATIONAL FRUIT SHOW.

This opened on Wednesday under anything but favourable auspices, the morning being rainy, followed by heavy thunder storms about mid-day, just as the *élite* of the patrons of the undertaking ought to have collected. However, at the appointed time, Earl Derby appeared upon the scene, surrounded by the leading members of the Society and in due form opened the exhibition. It is divided into four parts. First, the large conservatory, which contains the chief displays of both fruit and plants; secondly, a large tent in which the vegetables, a grand collection, and some fruits are shown; thirdly, the usual "annexe" filled with specimen Conifers, some *Liliums*, and florist flowers; and lastly, a whole tent full of Potatoes. In the grounds are various specimens of horticultural appliances, greenhouses, pits and frames, boilers in and out of work, mowing machines, vases, summer-houses, and other things too numerous now to mention. The fruit show may be pronounced a success, though not so complete as could have been desired: first, from the simple fact that it is too early for hardy fruits, such as Apples and Pears; and, secondly, because other fruits are scarcely so good as could be desired. This remark applies especially to stone fruits. Judged from a cultural point of view, with some two or three exceptions, the show, though good, was not remarkable. The exceptions, however, are noteworthy; and, when we mention a Queen Pine 8 lbs. 4 oz., not perfectly finished, but still superb, by Earl Bective's gardener; a bunch of Black Hamburgs over 13 lbs., from Lambton Castle, by Mr. Hunter, and other examples of Grape culture equally good, one begins to congratulate one's self that great gardening shows are not yet devoid of some real interest. To exaggerate as regards the superiority of the Grapes would be difficult. Earl Somers's gardener at Eastnor Castle, Hereford, took the lead with three superb bunches, black as jet, and perfectly finished, and these were cut from a Vine sixty years old. A triumph like this is something worth recording. From the same Vine Mr. Coleman had another bunch of Black Hamburgs, 5½ lbs. in weight, as perfectly finished as could be desired. These we regard as important facts—proofs that the Vine does not wear out, so long as the conditions necessary to its healthy existence are provided. From Ireland Mr. Roberts, gardener to Lord Charleville, brought some splendid Grapes, injured by the passage, no doubt, but still not deficient in finish. From the Tweed Vineries Mr. William Thomson sent The Duke, with berries very large and transparent. There can be no doubt that it is a Grape of first-rate quality for home consumption, though of its travelling qualities, if reports be true, there may be some doubt. New Grapes were not numerous, nor remarkable, but still Madresfield Court and Mrs. Pince Muscat were well shown. Of course this is not the season for the latter, but for winter use it may still be regarded as the coming Grape. Of that much maligned Grape Golden Champion, Mr. Hunter had a noble bunch, nicely ripened, but, as a whole, the white Grapes were green and anything but well ripened. Mr. Cowan showed his lime-kiln in the act of heating a large surface of piping. This excited a considerable amount of interest. For a large place, where the lime can be consumed, with coal at its present price, no doubt it is a great success.

NOTES OF THE WEEK.

— THE heavy rains which we had at the end of last week and beginning of this have induced Mushrooms to spring up in enormous quantities all over the country, and Covent Garden and other markets are now full of them.

— THE fruit-crop in France is reported as very deficient this year, especially in the south-western departments, Peaches, Pears, and Apples being unusually scarce. Of Walnuts, Almonds, and Chestnuts, however, the crop is abundant and good.

— WE saw in Mr. Bull's nursery the other day a new Pelargonium named Queen Victoria—a perpetual flowering hybrid, which promises to be a good addition to this class of plants. The flowers are bright rosy-carmine edged with white, and have a dark blotch on the petals. The plant is of fine habit, blooms freely, and has curled Parsley-like leaves.

— WE observed in Messrs. Osborn's Nursery, at Fulham, a few days ago a new method of grafting in the case of weeping trees. It consists in working them on dwarf stocks, so as to admit of the plants assuming their natural habit from the ground upwards. Of these three good examples may be found there, viz., a Kilmarnock Weeping Willow, a Weeping Beech, and a cut-leaved Weeping Birch. These all present a much more natural appearance than weeping trees do when worked on high naked stems, which hitherto has been the practice generally followed.

— WE understand that at Bedford a greenhouse, costing £25, has been put up at the workhouse, as a sort of gardening school, in which the boys may grow such plants as cannot be wintered out of doors. In connection with this the *Bedford Times* says, "We fear that the late workhouse master hardly had the credit which he deserved for improving the grounds with flowers." Some doubts have been expressed as to the legality of such an item of expenditure as £25 for a greenhouse; but should it, unfortunately, not prove strictly lawful, it will, doubtless, be defrayed privately.

— MR. MEREDITH, with the excellence of whose Grapes everybody is acquainted, has at present a houseful of Madresfield Court, heavily laden with large closely-set clusters of extremely fine well-coloured and densely bloomed berries. The luxuriant growth of this Vine and its heavy crop certainly exceed those of any Hamburg in the Garston Vineries, and the fine Muscadine flavour of the fruit is of the highest excellence. The Madresfield Court is reported, even by good Grape growers, to be a bad bearer, setter, and keeper; and to be one whose berries soon become mouldy. It is, therefore, generally looked upon as requiring some treatment peculiar to itself. Be that as it may, we have seen nothing to surpass the perfection at which this Grape has arrived at Mr. Meredith's establishment at Garston.

— THE auction sale of M. Linden's large collection of plants at Brussels, which has for some time been announced, will commence on Monday next, and has been arranged as follows:—On Monday, Tuesday, and Wednesday, stove and temperate house Orchids; among these are some new species and recent introductions not yet sent out. On Thursday, cool Orchids. On Friday, choice and large specimens of Palms, Cycads, and Pandanus. On Saturday, young Palms, well-developed and in pots. On Monday, Sept. 15th, a variety of tropical fruit trees, together with useful, officinal, medicinal, poisonous, spice-bearing plants, &c., &c. On Tuesday, Sept. 16th, stove and temperate house plants with ornamental foliage. On Wednesday, Sept. 17th, ditto, together with Bromeliads and Nepenthes. On Thursday Sept. 18th, Ferns, Agaves, Yuccas, cool house and open air plants. On Friday, Sept. 19th, plants with ornamental foliage for room decoration, and a miscellaneous collection of various other kinds.

— PERHAPS hardly anything in our public parks presents a more glaring example of bad taste than the "island" recently deposited in the Serpentine. In the first place, the position is ill-chosen. If the island was intended to be effective, it should have been placed somewhere in the lower and widest part of the piece of water, so that it could be seen from many points on the banks. In its present position, on one side of the narrow neck of the Serpentine, it is not noticed from many points of view, and is, in fact, hardly seen until one comes pretty close upon it. When the visitor has reached this point, the view which the shapeless mass presents is neither pleasing nor instructive. Nothing in nature or in art appears to have inspired the heads which planned it. The high shelving sides which it exhibits are like those of a railway embankment on a small scale. In the placid, almost motionless, flow of the Serpentine, such an aspect is entirely at fault. The level of an (not rocky) island in such a position should be, at all events, not higher than that of the surrounding banks. Possibly, in the course of time, it may disintegrate or sink so far as not to intercept the view of the opposite bank;

but until that occurs, or until its creators are wise enough to re-model it, we must be content if we cannot bring ourselves to conceive that it resembles anything so much as a huge and ugly heap of "shot rubbish," the back of which has been laboriously rounded, and the sides cut and sloped into rigid formality.

— MR. WILLIAM SUTHERLAND, late of Minto Gardens, Hawick, and, for the past two years, nursery superintendent to Messrs. Little and Ballantyne, Carlisle, has been appointed manager of Mr. Ker's nurseries at Garston, Liverpool, a situation for which his qualifications eminently fit him.

— AMONG the many nostrums which have been put forward as remedies for the Phylloxera, the latest is a recommendation to graft the Vine on the Japanese Mulberry (*Morus japonica*), which is almost exempt from the attacks of insect pests. It does not appear that the author of this suggestion has ascertained whether it is possible to graft the Vine on the Mulberry. This may be, to him, a very trifling matter, but it happens to be one on which the success of his proposed cure very much depends.

— IN the conservatories of the Botanic Gardens, Manchester, are some suspended wire-baskets, the centres of which are filled with *Sedum Sieboldii variegatum*, *Mesembryanthemums* of the Blandum section, and *Mother-of-Thousands*, one specimen only being in each pot. The sides and bottoms are furnished with *Echeveria secunda glauca*, inserted between the meshes of the wire. The drooping character of the plants in the centre of these baskets, and the fresh and glaucous ornamentation of their undersides produce a pleasing effect.

— NEAR the railway station at Blois, the slopes of the cutting on each side of the line were quite gay this summer with thousands of self-sown plants of Canterbury Bells, in numerous varieties of violet, rose, lilac, and white-flowered kinds. The plants originally escaped from a neighbouring garden, and have now naturalised themselves in great profusion over a considerable length of the railway banks. This is only one of many ornamental exotic hardy plants which, as we have often pointed out, may be easily naturalised in our woods, copses, and in the rougher parts of the pleasure ground.

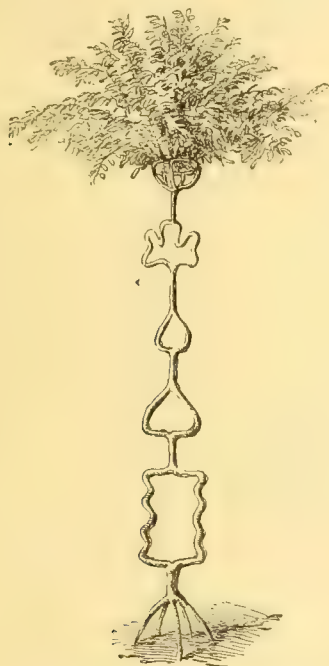
— MANY complaints have been made of the overpowering and offensive odour of the flowers of the Ailantus trees planted in the streets of Paris and other large cities. According to M. E. André, it is only the flowers of the male trees which exhale this unpleasant scent, and he recommends that none but female trees should be for the future planted in public or other places where the peculiar odour of the males might be offensive. This would seem an important point for the Americans and others who plant the Ailantus largely as a street tree.

— IN Mr. Dickson's interesting garden at Minstead, near Exeter, may be seen some of the handsomest specimens of Irish Yew in England. They are from 20 to 30 feet high, most symmetrically proportioned and in perfect health. Some specimens of the upright Cypress there are also still more remarkable, as they cannot be much short of 50 feet in height and are perfect in form, though objectionable as regards position. Some examples of *Pinus insignis* are quite timber trees, and here the Mount Atlas Cedars are developing their distinctive character. Under the shelter of the rock-garden we noticed admirable specimens of the more delicate *Conifera* growing most luxuriantly. Here, too, *Berberis Darwinii* may be seen in wild luxuriance, and *Escallonia*s in the form of large bushes. In the conservatory, which is large and handsome, is a sort of ante-room *boudoir*, which, being kept warm, receives the more delicate Orchids and stove plants during their season of blooming; this mode of treatment renders them, without injury or any material check, accessible to everyone.

— WE have just been shown, by that indefatigable collector, M. Max Leichtlin, some coloured plates of Lilies, concerning which we may say that, if the originals equal the representations in beauty, our gardens will soon be enriched with some beautiful and novel Lilies. Some of them, such as *L. Hansoni*, *Columbianum*, *Medeoloides*, *Avenaceum*, and *concolor* are as yet extremely scarce, and all of them are novelties more or less. A remarkable point about some of these Lilies is the altered appearance which they assume when grown under different circumstances. Thus in California *L. parvum* on the hills is crimson; but near water in the valleys it is said to be yellow. *L. Washingtonianum* is another variable kind, which in some districts is one of the finest of Lilies; but in others scarcely worth attention. *L. canadense*, too, blooms profusely in the south, where it has many flowers on a stem, while in the north it has seldom more than one, and in colour they vary from deep red to yellow. Circumstances such as these will serve in some measure to explain why the same Lily often comes to us under different names, and why the *L. concolor*, lately figured in the "Botanical Magazine," is so different from Salisbury's Lily which bears that name.

THE ACCLIMATISATION GARDEN AT PARIS.

THIS fine garden is situated in one of the pleasantest suburbs of Paris, and is surrounded for the most part by the Bois de Boulogne, once a fine forest of noble trees, but since the war little better than a broad expanse of low brushwood, nearly every tree having been cut down to afford scope for military operations during the siege. This establishment combines zoology with flower-gardening, and the result is far from being an unhappy one. The walks are fringed here and there with flower-beds, and the little stream or canal which meanders through the place is margined with tall grasses, great water Docks, Tamarix, Willows, Reeds, and other semi-aquatics. One of the most interesting features in the garden is a curvilinear conservatory, arranged in the natural style, with a little brook running through the central portion, widening occasionally so as to afford room for Richardias, Vallisnerias, and other aquatic plants, while the sloping banks and borders are planted with *Selaginella hortensis*, by no means a bad imitation of fresh green turf. These green banks afford room for isolated groups of *Hedychium*, Double Tiger Lilies, and vivid orange-coloured Lantanas. One pretty feature here was a circular mass of *Vinca rosea*, edged with a broad belt of the white variety, and it struck me as being very effective, the



Singular example of inarching in the Acclimatisation Garden at Paris.

plants being fresh in appearance and flowering profusely. Vincas do well here, and are largely grown by the French market gardeners as decorative plants for furnishing purposes. Here masses of *Bambusa gracilis* grow up 15 feet high, and with all the elegance of a Weeping Willow, while graceful Palms and Tree Ferns look quite at home when seen without the usual ugly and artificial assemblage of pots and tubs so familiar to our eyes at home. At one end is a rockery, which can be mounted by means of rustic stone steps, and from its summit a good view of the whole interior can be obtained. There is a cave beneath, and the whole is covered with scendent plants and Ferns. A fine mass of *Gnaphalium lanatum* hangs down the face of this rockwork, and its bright silvery aspect renders it at once conspicuous and highly ornamental. The Camellias, and other flowering shrubs planted out, are as fresh and as healthy as those in the great Temperate House at Kew, or the immense specimens at Chatsworth; and the more one sees of these conservatories in the natural style the better one likes them. Near the entrance to the cool conservatory and opposite the library door, there is a singular and interesting specimen of an Ash tree grafted

by approach (inarched). Of this the annexed is a sketch taken on the spot. At Montreuil, too, I saw some Peach trees even more complicated than this Ash, and not only healthy but bearing large crops of fruit. One fact worthy of notice in regard to the Ash is, that it was started with five young saplings, which, as shown in the figure, are all grafted together a few inches above the soil.

A circular carpet-bed here is so nicely arranged that it is much admired by everybody. The whole central portion is carpeted with *Sedum carneum variegatum*, on which nine shield-shaped patches of *Alternanthera* and succulents are arranged with the greatest care and exactitude. The central circle is of *Alternanthera magnifica*, with a Turk's Cap Cactus in the middle. *Iresine Lindenii*, which fills the eight marginal segments, is judiciously contrasted with the soft clear yellow of the Golden Pyrethrum. *Tradescantia* grows freely here and forms a cool neutral margin to the brighter colours within. Begonias grow and flower freely, and are used in several of the beds with excellent effect. One bed, consisting of a new hybrid, resembling *B. Laura*, is nicely arranged and neatly bordered with *Nierembergia gracilis*, the whole being margined with *Aralia albida variegata*. The old scarlet-flowered *B. fuchsoides* also grows very dwarf and compact, planted out in a shady position. Beds of *Boehmeria nivea*, Tamarix, and *Cucurbita maxima* grow freely, and afford variety. The last-named plant has bright green foliage elevated on petioles nearly a yard long, and bears great orange-ribbed fruits as large as a man's head. It is worth a trial in our own public gardens as an effective sub-tropical plant. A semi-circular bed just opposite the refreshment rooms also displays a very good example of neat and striking arrangement. *Sophora japonica*, planted out on the lawn, is trained over a seat, and is one of the finest of all deciduous trees for that purpose, while I know of no other plant more graceful in its outline during winter. Several masses of herbaceous Phlox, purple and white, are strikingly effective as seen here and there between the trees. In mixed borders are planted a mixture of herbaceous and bedding plants, interspersed with a few flowering shrubs. Hibiscus, Tritomas, Dahlias, and *Salvia splendens* here flower freely, grouped along with Yuccas, *Chrysanthemum frutescens*, Cannas, Solanums, and *Gaura Lindheimeri*, a North American flowering plant, used both here and in the gardens of the Tuileries with good effect. Several trees here are marked by bullets, though the garden itself does not appear to have suffered so much as might have been expected. Near the Gymnasium is a fine Wellingtonia, upwards of 30 feet high, which, from its healthy appearance, promises to make a noble specimen. A mass of white-flowered Lantanas, bordered with scarlet Zonal Pelargoniums, and edged with *Begonia Sandersoni*, struck me as being a very effective combination, and another of Christine Pelargonium, edged with a broad belt of silvery *Gnaphalium lanatum*, seemed very pretty. An oblong mass of *Petunia Madame Furtado*, bordered with *Alyssum variegatum*, was effective, the whole being still further improved by a clear blue margin of Lobelias. This garden is well wooded, and the yellowish-green foliage of the Acacias is strikingly effective at this season. The flower-beds, instead of being all crowded together into a meaningless design, are distributed so as to light up with bright colours the fresh turf and trees without wearying the eye by being everywhere too obtrusive or glaring.

F. W. BURBIDGE.

Trees.—Amongst the trees of the wood there is a vast variety; the sturdy Oak, the flexile Willow, the solid Maple, the graceful Ash, the terraced Cedar, with cones uprising through each Grassy-looking lawn of tender leafery; the Larch, in lieu of bells, hanging its scarlet blossoms from every pointed arch of its green pagoda; the stiff stout Holly, disdainful of the breeze; the restless Aspen all in a flutter at the faintest sigh; the spacious Chestnut enclasping the globe in its bountiful branches; the strict solemn Cypress, with every oppressed twiglet pointing straight up to heaven. As with the form, so with the bark or the timber; the Ebony sinking like stone; the Cork on the crest of the billow; the Elder so soft and spongy; the Box in its firm structure retentive of the finest engraving; the homely Deal; the thyme-veneer emulating the spots of the panther, or the plumes of the peacock.—*Dr. James Hamilton.*

LONDON MARKET GARDENING.

CELERY.

CELERY is grown extensively in the valley of the Thames, and in other places where the ground is somewhat level, and where abundance of water can be given whilst the crop is growing. Indeed, this is the only crop grown out of doors in market gardens that is persistently watered. Only two varieties of Celery, as a rule, are grown—the white and red Manchester, preference being given by consumers to the latter. If practicable, Celery is made to follow Vegetable Marrows and the Cabbage tribe, or French Beans; but, if that is inconvenient, it is made to occupy whatever ground is empty when plants are ready for planting. A great point observed by all growers is to have the ground to be planted cleared of its crop as soon as possible in autumn or early winter, and then heavily manured all over and trenched and ridged, permitting it to remain in this condition until it is required for spring Cauliflowers or for Radishes. Generally the Celery is planted in the alleys between the beds of Radishes, thus leaving the rows 5 feet apart, or between alternate lines of Cauliflowers in May and June, in which case the Celery will have taken to the soil, and will have begun to grow before the Cauliflowers are all removed. If this sort of interplanting, however, is practised, provision must be made for such at manuring time, by marking off the ground in 5-foot breadths, and giving a quadruple quantity of manure under each line, and into this the Celery is eventually planted, thus saving the labour of remanuring, which would cause a disturbance as regards the spring crop.

In spring two sowings are commonly made—one for the early planting, and the other, some weeks later, for a late supply. The seed is usually sown broadcast in frames, thinned out a little, and exposed as freely as circumstances will admit. Another way of raising the seed is to prepare a trench—say about 6 feet in breadth and 1 foot in depth—and to fill it in firmly with fermenting manure, over which some soil is strewed; then level and roll the surface, sow the seeds, and sift over them some light soil. Cover these beds then with rank litter until the seeds germinate, when the litter should be removed, in favourable weather, during the daytime, but replaced at night until the weather is sufficiently genial for the plants to stand without any covering whatever. When the seedlings, either in frames or in beds, have attained a fair size, they are pricked out (in May) in beds, in sheltered positions, in lines 9 inches apart, and 2 or 3 inches asunder in the rows. Here they are permitted to remain until time and convenience permit them to be permanently planted out, placing them as previously stated, in rows 5 feet apart and 8 or 9 inches asunder in the rows.

After the entire removal of a spring crop of vegetables the ground may be cleared, dug over, and marked off for Celery, and if it has not been previously prepared by giving the extra manuring in winter it must now be applied. No ridges are formed as in private gardens, but a furrow is merely drawn with a hoe, as for sowing Peas or Beans, but a little wider, and into these furrows the plants are inserted by means of a dibber. The strongest plants being put out first the remainder form successions, and the spaces between the rows are always well filled with Lettuces, French Beans, late Cauliflower, Endive, &c. Experience has taught growers for market that deep planting is not advisable, more especially in the case of late crops, because when planted deeply the Celery is apt to suffer from damp at the root. They, therefore, plant in such a way that, when finally earthed up, the roots shall be above the level of the trenches. Under such conditions rot is almost impossible. Soon after the plants begin to grow, a little earth is drawn to their roots with a hoe, but earthing up, properly so called, is generally performed at different times, and in the two first operations of this kind a hollow is left along by the necks of the plants, so as to conveniently retain a good supply of water. At the third and final earthing up the ridge is well closed at the top, for growth will then have ceased, and the soil and atmosphere being naturally moist, artificial watering would now be more injurious than beneficial. Celery ridges are, however, most liberally watered during the growing season, either in the ordinary way or by means of hydrants to which

one-inch metal pipes are attached, or common gutta-percha hoses. Where hydrants do not exist, hogsheads placed at intervals in the fields supply water for the purpose. Where watering is not done by cans the hose is employed; this mode is reckoned to be eventually as cheap as any. One man carries the end of the hose along the ridges, directing aright the force of water, whilst another keeps it regulated and free from twisting, and if the length be great a third must be employed to help, and to attend to the turning off and on of the water. Towards the end of August the early produce comes into use, and from that time until January or February a regular supply is kept up. Before lifting the crop, part of the tops of the leaves is switched off with a sickle, then, in lifting, a trench is thrown out at the end of a ridge, which is partially levelled, and the crop is removed at the same time; a set of people being employed in lifting, another in wheeling or carting to the packing shed, and a third in washing, bunching, and packing. Slugs, especially in moist weather, are sometimes very destructive to Celery leaves, but their progress is arrested by dredging along the tops of the ridges with air-slacked lime, and operating similarly on the banks or hedge-fronts surrounding the fields in which it is grown. Highly cultivated ground is seldom infested with this pest; but where there are neighbouring hedges or banks there slugs are sure to be found, and no matter how well tilled the soil may be their ravages will become apparent unless liming is resorted to.

W. F.

CUCUMBER GROWING FOR MARKET.

In a quiet country village about sixteen miles from London may be seen a small garden devoted to Cucumber growing for market. Having frequently visited this place, we are always forcibly struck with the simple means employed and the results obtained. The structures, or houses as they may perhaps be called, are primitive indeed, erected chiefly by the owner, who was a few years ago a gentleman's gardener, but a working gardener, where the charge was limited. For several years past he has devoted himself to Cucumber growing for the London trade. His first house for this purpose, if house it may be called, was an ordinary lean-to against a brick wall; it is about 20 yards long and 10 feet wide. In front of this is another of the same length and width, but with a span-roof, also a little glass under the front plate. These structures are low, but to get headroom a pathway is sunk along the middle, perhaps a yard deeper than the ground-level. On either side of this pathway is a long wooden trough from end to end of the house. These troughs are the most noticeable feature of the whole affair. They are of rough inch boards, from 2 feet 6 inches to 3 feet wide, and 10 inches deep, the soil used being decayed turf, full of vegetable fibre, mixed with decayed horse-droppings. The troughs are not quite filled at planting out, and as the mass gets filled with roots, a slight top-dressing is from time to time applied of nothing more than road-grit and well-decomposed horse-droppings. The idea is a proper one, that slight dressings, frequently applied, maintain health without over stimulating. The point most noticeable is the small modicum of soil allowed the plants to grow in: they stand about two feet apart; they are grown with straight stems, about a foot or eighteen inches long; and trained on temporary trellises, one foot from the glass, which is evidently not far enough, as both cold and sun affect them a little at that distance. The heat is supplied by means of flues—that is, 9-inch socket pipes put together with cement do duty as brick-flues. A row of these pipes is carried along on either side under the middle of the troughs. In excavating the path the side earth is left; on the top of this run these pipe-flues, almost close to the bottom of the troughs in which the plants grow. This flue is the only source of heat; in severe weather straw mats are put on, and are found to be of great service. The cubical contents of one of these structures is very little; and limited as the surface is, it can readily be covered up to economise the heat given off inside. The plants which have been in bearing all spring and summer were put out in the early part of winter; the object being to have plenty when the demand is good. The quantity of fruit produced in these small houses is something marvellous. We shrink from a statement lest we should be charged with exaggeration. They are cut three times a week, and supplied direct to the consumers, only the rough ones are sent to the market for what they will bring. The sort this grower prefers above all others is Sutton's Perfection. Telegraphs and various other esteemed sorts are grown, but no sort is equal with him to Sutton. At our last visit, Aug. 12, the plants were exceedingly healthy; neither disease, insect, nor gouty plants were to be seen in the place.—*The Gardener.*

THE FRUIT GARDEN.

GATHERING AND KEEPING FRUIT.

RESPECTING the time of gathering ordinary fruit (Apples, Pears, Medlars, &c.), as a general rule, the fruit must be what is called tree-ripe, *i.e.*, the separation of the fruit-stalk from that part where it is fastened must take place without any difficulty, and the stone-fruit as well as the berry-fruit must be flesh-ripe, *i.e.*, fit for consumption. Nuts and Chestnuts, however, must remain on the tree until they begin to fall of themselves. The most of our summer Pears and Apples, *i.e.*, those which ripen till the end of September, become much better flavoured and keep longer if gathered from the tree before they are flesh-ripe, and spread on a layer of clean straw, hay, &c., in a shady and dry place. If kept in damp cellars or caves, they will always have a bad taste. The best way is to gather them gradually, because they never ripen at once, even on the same tree; as, for instance, those on the top or on the sunny side are generally fit for gathering a week sooner than those on the shady side, and it is surprising how much the date of gathering influences the quality of some fruit. The date of ripening, however, even of a certain sort of fruit, is always very changeable, according to the weather, the position of the tree, and, if it is worked as a dwarf on Paradise or Quince; these always ripen their fruit much earlier because their roots are nearer to the surface of the ground. Plums, Cherries, and most Grapes, however, are the better the longer they hang on the tree, even after their normal ripening, especially those Plums that are intended to be dried are much better if they remain on the tree as long as possible; they are afterwards much sweeter, more solid, and already nearly half dried; while some other stone fruit, as, for instance, most Apricots, become mealy if they hang too long on the tree.

Referring to the autumn and winter fruit, Medlars, which are only eatable in a decaying state, are gathered when tree-ripe and spread over a layer of straw, where they may remain till they are fit for use. Autumn and winter Apples and Pears ought to be gathered when tree-ripe. There are, however, some late winter Pears, which, in unfavourable seasons or under other circumstances, sometimes will not become tree-ripe in the autumn. They may be left on the tree as long as possible, but in every case they must be gathered before the leaves begin to fall, as winter Pears gathered after this time remain always like a Turnip. The cause is that their flesh becomes dry after this time, and the chemical process which causes the formation of sugar and softens the cells, is then at an end. I think that when the leaves begin to fall, the circulation of the sap in the tree ceases also, and the fruit receives not as much sap as it evaporates; perhaps, also, a part of its sap goes back into the wood after this time. But, however, so long as the circulation of the sap is in activity, winter fruit may remain on the tree with great advantage as long as possible, even under the influence of severe frosts. I saw this very well in the autumn of 1871, when I was residing in South Germany; that autumn was very wet; and no sort of fruit trees ripened its wood, but in the beginning of October all were still in full vegetation. I feared that we should have a very dangerous winter for our fruit trees; and, indeed, no German pomologist or fruit grower will ever forget the winter of 1871-72, which killed in Germany millions of old fruit trees, not to mention other millions of young ones in the nurseries. In the little Grand Duchy of Weimar alone, more than 600,000 old fruit trees of all kinds were destroyed in that winter, especially many old trees of Plums, Walnuts, Pears, and Peaches. To go back to our subject, that year (1871) we had very few fruit, because late frosts in the spring destroyed the blossoms, except some late flowering or very hardy sorts, as Boiken, Parker's Pippin, Hawthornden, Sykehouse Pippin, Luiken Reinette, Gros de Cassel, Loskrieger, &c. As the trees, especially those of the four first-named sorts, were still in full vegetation, we gathered in the middle of October only half of them, and the others not before the middle of November, when the leaves began to fall, after several sharp frosts of 10° to 12° had passed over them. As all autumn and winter fruit begin to grow most when the nights become colder and longer, and under the influence of the autumn fogs, those Apples were nearly double as big as the earlier gathered ones, and had not received any check from the sharp frosts. On the contrary, I found that they kept better and longer, and became better flavoured. This is a certain proof that, at least Apples, as long as they are not yet ripe, may withstand even very severe frosts, while I found that ripe ones are destroyed by very slight frosts. Another important point in the fruit crop is the manner of gathering the fruit. All winter fruit and those that are intended to keep longer than a fortnight, must be gathered carefully by the hand, while those that are to be used within three weeks after gathering, may be shaken off the tree. There are some

tender sorts of Pears which are very sensitive to even the slightest pressure, as, for instance, the old Figue d'Alençon becomes bitter if bruised. Respecting the keeping of winter fruit, there is a little difference between the different sorts. Those sorts which are very much inclined to shrink must be placed as soon as possible after gathering in a cellar, or in a cool and dark room, especially the most of those kinds which have a russet skin, for instance, Reinette Burchard, Goldmohr, Sykehouse Russet, Parker's Pippin, Reinette Grise, &c., as they evaporate and shrink too much in a dry air, while those with a smooth skin generally keep much better, and must be kept as long as possible in drier and cooler rooms. All these fruits must be spread on hurdles or boards upon a thin layer of quite dry and clean Moss, which must be previously scalded, and it is very advantageous to cover them afterwards with blotting paper or old newspapers. This paper preserves the fruit very much from the influence of changeable temperature, in a damp room from too great moisture, and in a dry room from too much evaporation. Care is, however, to be taken that no other things which may spoil the air are kept in the fruit room, as, for instance, vegetables, Potatoes, or fermenting matters, &c., as they always spoil the flavour of the fruit. The clearer and fresher the air, the better will the fruit keep, and they must be carefully looked over sometimes, and every rotten one removed. If the air in the fruit room is too damp, it is very good to put any kind of salt on a board, which is placed a little obliquely. The salt very soon attracts dampness from the air, and runs down in a vessel which is put under the board. If dried afterwards, it may be used again. The cooler and the fresher the air in the fruit room, the longer the fruit keep, as the coolness renders the chemical process of ripening difficult, while, on the contrary, warmth favours it.

A very good way for keeping late winter Pears and Apples is to keep them between dry Pear or Chestnut leaves in the open air, so that a layer of fruit is put upon a layer of leaves; over them again a layer of leaves, then Pears, and so on, forming in this way a heap, which is afterwards covered with some branches of the Fir tree to prevent the wind destroying the heap. The old St. Germain Pear has kept in this way very well—indeed, better than in the best fruit room. Some people bury Apples and Pears in the ground in the winter, after an old-fashioned way of keeping, but I should only recommend it for common and very hard sorts. The marks for discerning when fruit begin to ripen are, in Pears that they become soft near the stalk, which may be ascertained by a slight pressure with the finger; in Apples, when they begin to smell. Colour in the ripening, does not appear in all sorts of fruit; there are, for instance, many good kinds of Pears which never change their colour even when beginning to rot; others change colour sometimes, and sometimes do not; as, for instance, the Beurré Napoléon very often remains grass-green. There are again some which keep very well three or four weeks after ripening, while others do not keep longer than three or four days. There must always be great attention paid to this, as many Pears begin to rot in the fruit house, and are soon quite decayed, although on the outside they will look well. Grapes keep very well four and even five months, if put carefully between dry millet, in which way also some Hungarian fruit dealers export their Grapes with the best success. The Tyroleans, who export quantities of their celebrated White Rosmarin Apples to England, envelope them twice carefully in silk paper, and pack them afterwards between scraps of paper, which is without doubt always the best material for the purpose.

GUSTAVE WERMIG.

Merriott Nurseries, Crewkerne.

THE ORCHARD HOUSE.

BY PETER GRIEVE, CULFORD GARDENS.

(Continued from page 169.)

THERE is an orchard-house at Culford, a span-roofed structure 95 feet long, 20 feet wide, 12 feet high in the centre, and 6 feet high at the sides. The rafters are placed 20 inches apart, and the glass used is 21 ounces to the foot, cut into panes 20 inches by 12 inches; a strong Welsh slate of the same dimensions taking in each instance the place of the lower pane, in immediate connection with the troughing. The side lights are hung on pivots from the centre (as shown in section, fig. No. 3). The quadrant with its lever, placed at each side of the house, acts upon the iron rod attached to the lights, and opens or closes them to any desired extent. There are no roof openings whatever in this structure, nor are they required, as, in addition to the opening of the lateral or side lights, the two lights shown above the door, in the

elevation, are both made to open in the same manner, thus securing ample egress for heated air at the highest possible point of the house, and rendering the ventilation in all respects complete. Both the end and lateral lights are so fixed as to be easily removed altogether when desired, or, in order that their places may be taken by the Hexagon netting before alluded to, which most effectually preserves the ripening fruit from birds, as well as from insects of all sorts. The lights might even be removed at an earlier period than that of the ripening of the fruit, were it not that they are occasionally required for the purpose of closing the house, in order to fumigate the trees, as it is found that not even the constant practice of syringing will (during some seasons) prevent Cherry trees from becoming infested by the black fly, and Peaches and Nectarines from being injured by the common green aphid, &c., for which pests frequent fumigations are found to be the only really effectual remedy.

Fig. No. 3 is a transverse section of this house, showing the central bed or border, which is $6\frac{1}{2}$ feet wide, occupied by Peach and Nectarine trees, trained in a pyramidal form, and planted in the centre of the bed, at a distance of 5 feet from tree to tree, while the side borders are 3 feet wide, and occupied by a collection of pyramidal Cherry trees, planted 3 feet apart. The paths are 3 feet wide, upon the ground-level, and the borders are raised some 6 or 8 inches above the level of the paths, and are about 2 feet deep, including drainage. Trained to a single wire over the centre of the paths, at a distance of one foot from the glass, is the spurred stem of a Black Hamburgh Vine, the roots of which are outside the structure. Five feet of the end of one of the side borders is occupied by a cemented cistern 5 feet deep, into which the rain-water from the roof of the house flows; and the over-flow from this finds its way into an underground tank of large dimensions, from which it is pumped back as required. The inside cistern being always kept full in order that the water when used may have acquired a temperature similar to that of the atmosphere of the house. The Peach and Nectarine trees which



Fig. 3.—Section of span-roofed Orchard House at Culford.

occupy the central part of this house were originally grown for some time in pots, but have been planted out in their present position for about twelve years, and have long ago attained to the full size which the structure containing them will permit. They still continue in excellent health, and generally bear large crops of tolerably good fruit, but not so highly coloured as that produced in another house, in which these trees are trained upon another principle, which will be hereafter described. The soil in which these trees are grown is composed of a somewhat tenacious loam procured from a distant part of the estate, to which was added about an equal portion of the original soil, which is somewhat light in character. There was also added a portion of well-rotted dung and some calcareous matter, in the form of lime-scrap, &c., from old buildings, and the borders have from time to time been enriched by slight dressings of bone-manure.

Before the trees were planted out, the border was rendered firm by being well trodden down, and, on removing the trees from their pots, their roots were as much as possible set at liberty, and cut back to some considerable extent. After they were carefully planted, the border was again rendered very firm by being well rammed down. The trees have been root-pruned about once in two or three years ever since, as has been considered necessary. This is accomplished by throwing the soil out of the border until the drainage is reached, then carefully withdrawing the soil with a fork from each tree up

to within a foot or 18 inches of the stem, with a sharp knife I cut back the strong roots, &c., to whatever extent may be deemed necessary. Each tree is left standing with its ball of soil, not, perhaps, exceeding $2\frac{1}{2}$ or 3 feet in diameter, and can now be moved about or re-arranged, should this be desired, without difficulty or danger. The severed roots and fibres are now all picked carefully from the loose soil, and when a portion of fresh material has been added to the same, it is then returned to the border and rendered as solid and firm as possible by being well trodden and rammed down; and, as the soil is, and ought to be, always rather dry when this operation is performed (and which, by the bye, is generally accomplished as early as possible during the month of November), it should now receive a liberal supply of water, and soon after this be well mulched with half-rotted manure. No more water should be given until the month of March following. This treatment appears to induce the production of short-jointed fruitful wood; but little stopping or pinching is found necessary, and that is generally confined to the higher parts of the trees, where they press upon the glass, or where occasional strong shoots may be produced, which should be promptly stopped, with a view to encourage the development of the lower branches.

The Cherry trees which occupy the side borders were, like the Peaches and Nectarines, grown for some time in pots, and were some years since planted out in soil similar to that in which the Peaches, &c., are growing, but their progress was for some time

less satisfactory than was desired; and, some four or five years since, the trees were all taken up, with as good balls of earth as could be made to adhere to them. The drainage of the border was examined, and found to be in all respects satisfactory. Previously to this there had been procured a quantity of what is known as the "runnings" of a clay-pit—that is, the surface clay from the sides, &c., of the pit, which may have been for years exposed to the pulverising influences of the atmosphere, frosts, &c. This is not unfrequently found to be a valuable ingredient in rendering a too light soil more suitable

for the growth of fruit trees. A very considerable portion of this material was now incorporated with the original soil of the Cherry borders. The trees were again carefully planted, and the soil of the borders rendered tolerably firm. The result has been, if not quite all that could be desired, certainly all that could reasonably be expected. The trees have got into a better state of health, and the fruit has ever since been abundant and of excellent quality. It may be observed that the original or natural soil of the garden here is such, that Cherry trees can only with difficulty be kept alive for a few years in it. The only exception to this is in the case of the Morello variety, which, when trained on a north wall, and planted in soil to which pulverised clay has been liberally added, will continue for a few years to produce very good fruit. But the trees seldom continue long in good health, and are at the most but short-lived.

The Vines trained above the pathway in the orchard house are of the Black Hamburgh and white Muscadine sorts, and are planted in the natural soil outside the house. They are secured to the single wire over the centre of the path, and pruned upon the close or short-spurring system, each shoot being stopped at the joint next to the bunch, and tied close in to the stem. The fruit is produced in great abundance, and is of very good quality and well-coloured, and in all its stages throughout the season adds very considerably to the interesting appearance of the interior of the structure.

Fig. 4 is a transverse section of a span-roofed structure or orchard house at Culford, 75 feet long, 20 feet wide, 12 feet high in the centre, and 6 feet high at the sides. It is glazed and ventilated, &c., in all respects like the other span-roofed house already described. The path in this structure, however, is in the centre of the house, and is 3 feet 6 inches wide, and paved with 6-inch Minton tiles. The borders on each side of the path are 8 feet wide, and raised some 8 inches above its level. Wires are stretched under the roof, from one end of the house to the other, at a distance of 16 inches from the glass, and 1 foot apart. Peach trees are planted on one border and Nectarine trees on the other. This house is also furnished with an inside cistern for rain water, and an underground tank in all respects the same as in the other house. The trees are planted at a distance of 8 or 10 inches from the side walls, and about 6 feet apart. In every instance the leading shoot of each tree was trained vertically, while horizontal branches from each side of the tree were led along each wire until they met those of the next trees, in much the same manner as a Pear or other fruit tree is trained to a wall according to what is known as the horizontal system of training. The development of the trees is now nearly completed, that is, the roof of the house is entirely covered or nearly so, and presents a series of twelve cordons of Peaches on one side, and an equal number of Nectarines on the other side of the house, the central wire, or that immediately below the apex, being occupied by a Vine. These cordons are pruned every winter, or rather early in spring, in what may be called the rough spur system, or very much in the same way as a Pear tree trained to a wall would be pruned; and the young shoots produced upon these spurs are stopped, or cut slightly back twice, or sometimes three times during the growing season. This house being in all respects efficiently ventilated, and the trees themselves being placed in the best possible position to derive the full benefit of air and solar light, &c., the fruit produced by them has generally been of excellent quality as regards colour, flavour, and size, and much superior to any produced here either on standard or planted-out trees, or by trees growing in pots. Fruit trees in pots of various kinds are placed upon the borders, on each side of the path, as shown in section Fig. No. 4, which also shows two 4-inch hot-water pipes on each side of the house, close to the side walls. These, however, are seldom used, further than to exclude frost when the trees are in bloom, and the borders, &c., covered with bedding plants; and for this purpose they are then found very useful. Any attempt (however meagre or incomplete) to describe the various structures, designated as orchard houses, should not by any means omit to mention a very ingenious contrivance, invented by an amateur horticulturist, the Rev. Mr. Fountaine, of Brandon, in Norfolk, in which the fruit trees are placed, or plunged upon a portable truck, or trucks, which by the aid of simple but effective machinery, can be easily drawn out into the open air, and returned again into the structure at pleasure. It would appear, however, that the practice of growing fruit trees in pots and under glass is not altogether new. We all, of course, know that good Grapes have been produced in this manner from time almost immemorial; and even Peaches and Nectarines and other stone fruits are said to have been occasionally cultivated in this manner, long before Mr. Rivers invented the felicitous term of "Orchard House." But, notwithstanding this, the grateful thanks of the country at large are not the less due to such names as Rivers, Pearson, and others, who have done so much to render the practice

universal, or to reduce it to a universally accepted system of culture. It was not the climatic eccentricities of our seasons alone which induced the lovers and cultivators of fruits generally to hail with gratitude and enthusiasm the introduction of this system of fruit culture; as it may be said with truth that nearly, if not quite, one-half of the fruit produced in many parts of this country, in the open air, and on trees trained to garden walls, &c., is injured, disfigured, or altogether destroyed by birds and insects of various sorts. And even a tithe of the fruit so produced could not be secured unless gathered before being fully ripe, or by being protected in some way or other. It may also be said with truth that nearly all the stone fruits cultivated in this country are improved in size, flavour, and appearance by being grown under glass, always providing that the necessary attention be given to careful watering, ventilation, &c. Many varieties of Plums, when grown as standard trees in the open air, or even when trained to walls, produce fruit which, at the best, is only fit for culinary purposes; but these sorts, when grown in the orchard house, either in pots or planted out, are found to produce fruit in all respects delicious, and fit for the most select dessert. This improvement, secured by culture under glass, also holds good as regards other kinds of fruits.

(To be continued.)

Best Early and Late Fruits.—The following are a few questions to which I have supplied answers, in the hope that they may be found useful, viz.:

—What is the best variety of Black Grape for general purposes? Black Hamburgh. —What are the best kinds of White Grapes? Foster's Seedling for early, and White Muscat for late work. —What are the best Pine-apples for winter and summer? Ripley Queen for the summer, Black Jamaica for winter. —What are the best kinds of Melons for late and early work? James's Gem, scarlet fleshed, Gilbert's Green Fleshed. —What are the best kinds of Peaches for early and late work? Royal George for late, and Early Beatrice for early work. —What are the best kinds of Nectarines for early and late work? Victoria for late, and Elrington for early work.

—What are the best kinds of Apples for dessert—early and late; for kitchen purposes—early and late? Ribston Pippin late, Kerry Pippin early; Wellington late, Keswick Codlin early. —What are the best kinds of Pears—early and late? Marie Louise early, Bergamotte d'Esperen late. —What are the best kinds of dessert Plums, for use early and late? for kitchen purposes? Greengage early, Golden Drop late; Victoria late, Orleans early. —What are the best kinds of dessert Cherries—early and late? for kitchen purposes? May Duke, Black Tartarian; Morello and Kentish. —What are the best kinds of Figs—early and late? Castle Kennedy early, Brown Turkey late.—R. GILBERT, *Burghley Gardens, near Stamford.*

Figs dropping their fruit.—Can you inform me why the fruits on my Fig trees drop off when they are about three parts grown? The trees themselves are vigorous; the subsoil, however, upon which they are grown, is chalk. The trees have been planted six or seven years, are in a sheltered position against a south-west wall, and I have never yet succeeded in getting any fruit. I should be exceedingly obliged if you could give some information as to the best means of preserving them on the trees till they are ripe.—W., *Culham.* [The chalky subsoil on which the Fig trees are grown would not, I think, cause them to drop their fruit when about three parts grown. I have used old lime-rubbish in the bottom of borders in which Fig trees were planted, and never found any ill effects from it, and I believe the Fig rather likes a calcareous soil. A more likely cause of failure would be the trees growing in a rich border, and making too gross shoots. If this is suspected to be the case, I should lift the trees and root-prune them, and afterwards confine the roots with brick-work in a smaller space, where they could be

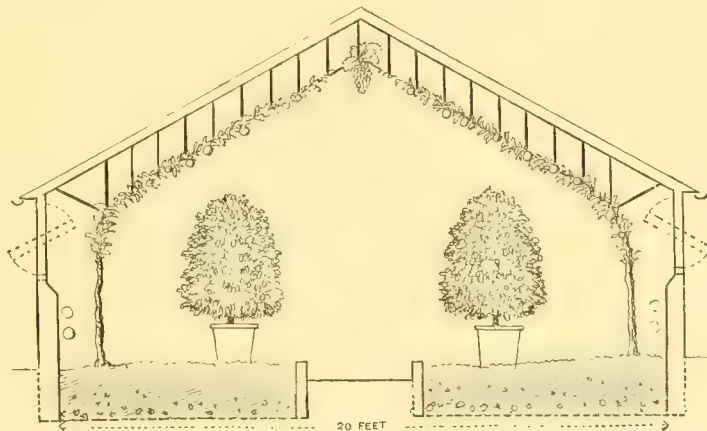


Fig. 4.—Section of an Orchard House, at Culford, with Trees on roof.

manured on the surface, or given liquid-manure in dry summers when swelling their fruit. Fig trees grow and bear well when confined in pots or tubs, and fed with liquid-manure in the fig-growing season. The finest and richest flavoured Figs I have ever grown were from trees planted in the turfy soil taken from the top of a magnesian limestone rock, with their roots confined in a 3 feet wide border, and well manured on the surface every year.—WILLIAM TILLERY.]

FRUIT IN THE MIDDLE AGES.

THE Quince was much grown in the middle ages, being considered the most useful fruit of all. It not only formed the basis of the celebrated preserve called Cotignac, for which the city of Orleans was so renowned, but it was also used as an accompaniment to most kinds of meat dishes. The Quinces of Portugal were considered the best; but the Cotignac of Orleans was so highly esteemed that it was never absent from the dinner-tables of the kings, queens, and princes of France, and some boxes of this preserve were the first offering presented by the inhabitants of Orleans to Joan of Arc when, after succeeding in raising the siege, she entered that city on the 29th of April, 1429. In the thirteenth century the Chestnuts of Lombardy were cried by itinerant venders through the streets of Paris; but in the fourteenth century we find them superseded by the Chestnuts of Lyons and Auvergne, which had then achieved an established reputation. Fruit gardens have been at all times held in high honour at Paris. The street known as the Rue de la Cerisaie owes its name to a plantation of Cherry trees made by Charles V., while the Rue Beautreillis was named after the fruit trellises of the celebrated hôtel Saint Paul. The Portuguese claim the honour of having first imported the Orange from China; but, in an ancient account-book belonging to the house of Humbert, dauphin of Viennois, in 1333 mention is made of a sum paid for transplanting Orange trees. This date is much earlier than the first voyages made by the Portuguese to the East Indies. Three hundred years before the Christian era the followers of Brennus had acclimatised and propagated the Vine in France. Since that time its culture has prospered and extended to such a degree, that it now forms one of the principal sources of the wealth of the country. During the Middle Ages, horticulture was almost purely utilitarian in its character, confining itself to the production of fruits and vegetables. It was not until about the fifteenth century that, ornamental flower-gardening appears to have developed itself—first in Italy.

The Mirabelle Hative Plum.—This has not been grown much in England, principally because it is very delicate as regards flowering and is usually destroyed by spring frosts; it is very useful for preserving, and in the hands of French confectioners it is delicious. We have grown the sort for many years, and, as a rule, we gather a crop about once in five years. In most gardens this paucity is fatal to its cultivation. As an eating Plum it is sweet and good; but it ripens at a time when fruit is abundant, and we do not, from our experience, think that it is ever likely to be popular. The Mirabelle de Metz, which ripens later, is better as a preserve than the Mirabelle Hative.—THOS. RIVERS and SON, *Sawbridgeworth*.

Fruit in Persia.—Fruit in most parts of Persia is of excellent quality and flavour. The native poets have celebrated the produce of each district. Ispahan boasts the best flavoured Musk Melons; Nishapour, the largest Water Melons; Holwan, the most luscious Figs; Kirmanshah, the best Apricots; and Shiraz, the finest Grapes. Undoubtedly Persia has a good right to boast. We owe to her many of our finest and most favourite fruits, and she still devotes more care than any other Eastern nation to their culture. The Melons of Ispahan are tended with the greatest attention. In the best gardens they are placed on tiles, and turned round several times a day, in order that each side may ripen equally in the heat of the sun. The result is that they probably excel in flavour any Melons in the world. They are esteemed a great delicacy in Persia, and are sent as presents not only to the cities of the interior, but even to Baghdad and the holy place of Kerbela and Nedjef in Arabia.—*Quarterly Review*.

Fruit in Southern Virginia.—A writer from this district says:—"Peaches grow almost spontaneously, and ripen from June till October. Pears grow and yield abundantly. All kinds of Grapes which have been tried thrive; but few are cultivated. Said a neighbour, 'What is the use when, with my little hand cider-mill and a negro to help, I can go into the woods and in half a day make ten gallons of as good wine as ever was drunk?' Apples do well; Plums and Cherries do better than ever known elsewhere. Wild Strawberries, Raspberries, Dewberries, and Blackberries abound; and Prunes, Pomegranates, Quinces, and Figs can be raised, and are, to some extent, in gardens."

THE FLOWER GARDEN.

RARE BORDER PLANTS.

I HAVE the following interesting and but seldom-seen plants now in bloom in my garden, viz.:—

Centaurea arenaria.—This pretty species has large solitary heads of golden-yellow flowers, almost equal in size to *C. macrocephala*, but of a much deeper and brighter colour. The foliage, moreover, is not nearly so coarse as that of the latter species. It is a very showy and desirable plant.

Cyananthus lobatus.—This pretty Himalayan Alpine has done very well with me this summer, planted out in the open border, in a mixture of loam, white sand, cocoa fibre, and thoroughly rotten manure. Its pale blue Periwinkle-like flowers are very uncommon-looking.

Oenothera anisoloba.—This curious Evening Primrose is closely allied to *O. acaulis* and *taraxacifolia*, but is at once distinguishable from either of them by its upright growth. It has large white flowers, somewhat smaller than those of *O. taraxacifolia*.

O. marginata.—This very pretty species, for which the country is indebted to Mr. Thompson, of Ipswich, is closely allied to *O. eximia*; it may be said to be intermediate between that species and *O. cæspitosa*. It has a neat, tidy, bushy growth, and produces a long succession of fragrant white flowers about the same size as those of *O. speciosa*. It is at present very scarce, but when once grown will prove a lasting favourite. Its narrower leaves, more compact growth, smaller flowers, and more prolonged inflorescence at once distinguish it from the plant hitherto known as *O. marginata*, which is in reality *O. eximia*.

Salvia canariensis.—This is a rather tall strong-growing species, with large spear-shaped leaves, and heads of pale lavender-purple flowers, similar in colour to those of *S. lanceolata*.

S. chamædryoides.—This very lovely species ought to find a place in every mixed summer herbaceous border. It has very small foliage, somewhat resembling that of *Veronica* or *Teucrium Chamædrys*, and spikes of small deep sky-blue flowers, rather darker than those of *S. patens*.

S. sylvestris.—This pretty sage is rather lank and straggling in its growth, and requires careful tying up, but when judiciously fixed to the stake its dense masses of small bright blue flowers are most ornamental in the mixed border.

Polygonum capitatum.—This very ornamental creeping *Perisicaria* is a most desirable plant, both on account of its pretty purple-tinged leaves and numerous globular heads of pink flowers. It grows most luxuriantly in cocoa fibre, sand, and thoroughly rotten manure.

Gladiolus cruentus.—This lovely corn flag is just opening its long dense spike of scarlet-flowers, slightly feathered with yellowish-white on the lip, and fully justifies its reputation. It is most effective, both as a single specimen and in masses.

Dahlia Cervantesii.—This very handsome single Dahlia is seldom if ever seen in our herbaceous gardens, but it is invaluable as a back-ground in a mixed border. It throws up a tall stem, some 7 or 8 feet high, covered with bright orange-red flowers. I owe Mr. Leeds, of Longford Bridge a debt of gratitude for the gift of this plant.

D. coccinea in some respects resembles the last-named species, but is at once distinguished by its dwarf growth and smaller flowers. I saw a small bed of this very showy little Dahlia in the Oxford Botanic Gardens last summer, and was much struck by its beauty.

D. aurantiaca lutea.—Under this name I procured from Messrs. E. G. Henderson a very dwarf Dahlia, with bright yellow single flowers, about the same size as those of *D. Cervantesii*, and with which I am delighted.

D. glabrata.—This beautiful little miniature Dahlia is also known as *D. Merki* and *D. scapigera*. It has numerous pale mauve or pure white flowers, which are most effective in border, button-hole, or bouquet. I have lost, and am very anxious to recover, the white variety.

Molucella lævis.—For this singular Labiate I am indebted to Mr. Chas. Tyrwhitt Drake, who gathered the seeds in Palestine. Its leaves somewhat resemble those of *Marrubium vulgare*; but its remarkable point of interest is the whorl of great gaping green calyces with which the stem is clothed, each containing at its base a pale pinkish Lamium-like flower.

Campanula isophylla.—This lovely Campanula may be said to be intermediate between *C. carpatica* and *C. Barrelieri*. It is a native of the south of France, and is one of the gems in Mr. Moggeridge's

Flora of Mentone. I am indebted to Mr. M. for the seed from which my plant was raised. It strikes readily from cuttings, and is quickly increased.

H. HARPUR CREWE.

Drayton-Beauchamp Rectory, Tring.

Lilium auratum.—I have grown this for two years, and it seems to thrive very well, and to be perfectly hardy, as are also the lance-leaved kinds; but the latter bloom so very late that the blossoms do not open properly. I should state that my soil is of a very ordinary character, having had no particular attention bestowed upon it. It is of moderate depth—say about 18 inches. My plants of *L. auratum* are about 4 feet high, and I expect to see them much higher next year. The blooms are quite as large as those which one sees at shows, and are very richly spotted, the yellow bar or ray up the centre of the petals being also very distinct. Their perfume can be smelt, on a still evening, at a considerable distance away, and is most agreeable. The plants get no shelter except what is obtained from a garden wall, and they are quite open to the north-east and east. The district, too, is smoky, being a manufacturing one.—JOHN WM. GAUNT, Leeds.

Harmony of Colours in Flowers.—One of the obscure points of science is the cause of the harmony of colours always observed in flowers. When two colours are found, they are generally complements of each other. The wild Asters of autumn generally have purple rays and yellow disks. The Pansy is yellow and purple, and the blue Violet has its stamens yellow and its petals reddish-blue. In fact yellow and purple generally go together in flowers. A splendid example is afforded by the large *Iris germanica*, the popular flower-de-luce of our gardens. From the white base of its petals the colourless sap passes into the petals, which become of a gorgeous purple, while the beard of the petals becomes at the tip a very rich yellow, though the lower part of each separate filament is not of the purest white. What chemical or physical law determines the arrangement of colour, if there be any such secondary cause, is not yet discovered. Two French chemists, Fremy and Cloez, say that the tints of flowers are due to cyanin, xanthin, and xanthein. Cyanin is reddened by acids. A supply of vegetable acid developed in a flower would then turn the blue to rose colour, while a scarcely sensible quantity might produce a purple. Xanthin is a yellow from the Sun-flower, and xanthein the yellow of the Dahlia. There are probably also other colouring substances.—*American Paper.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Begonia Sedeni.—This has been in beautiful bloom in root-work here for about three weeks. It seems quite hardy; it has been planted out about two years.—GEORGE A. WILSON, *Heatherbank, Weybridge.*

Lomaria chilensis.—This is a very useful Fern for general decorative purposes. It has a rosette habit and dark-green fronds, not unlike those of *Blechnum* (boreale) Spicant. It grows well in a greenhouse, and plants of it keep fresh and healthy for months in an ordinary sitting room. The point about it most worth knowing, however, is that it is perfectly hardy in favourable situations, even as far north as York.

Veratrum nigrum.—This fine old plant is in beautiful condition in my garden at the present time. It has a branching spike of dark chocolate-coloured flowers, with bright yellow anthers, fully a yard in length. In early summer its plaited fan-like leaves, nearly a foot broad, are very striking. Though perfectly hardy, it should be planted in sheltered situations, otherwise the wind makes sad havoc with its splendid foliage.—T. WILLIAMS, *Ormskirk.*

Bocconia (Macleaya) cordata.—This is a native of Chili, and, when liberally treated, makes a noble mass in sheltered positions on lawns during summer. It has glaucous stems, and large-lobed foliage, and in rich soil grows 7 or 8 feet high. It bears large panicles of downy-looking flowers, but it is most ornamental before these are produced. In the sub-tropical garden, or at the back of a herbaceous or shrubby border, it is most effective.—T.

The Oleander.—The different varieties of Oleanders are now flowering freely around Paris, where they are largely grown in tubs and large pots, not only in the public gardens, but in front of nearly every café. They are very ornamental, and deserve to be more generally grown around London. A warm sunny position must be given them, so as to thoroughly ripen the wood, or they will not flower well.—B.

The Horse Gowan.—I think your correspondent, Mr. Leo Grindon, has fallen into a slight error in stating that the Ox-eye Daisy is called in Scotland the Horse Gowan. I have resided much in that country, but never heard it so named. In the northern counties of Aberdeen, Banff, and Kincardine, the Dandelion is popularly known as the Horse Gowan. Perhaps he will kindly name the locality where the Ox-eye Daisy bears the name of Horse Gowan, for I was always under the impression that the name belonged exclusively to the Dandelion.—LEONTODON.

Digging Borders.—A peculiar and, as I think, an excellent rule at Bitton, is not to disturb the ground where hardy plants are grown by digging. The borders are so full of rare and valuable plants that the spade would be a destroyer indeed. The common practice of digging borders is bad in every way. Clean and enrich the surface by all means, but do not mutilate aimlessly. The right way is to thoroughly prepare the ground at first, and then do with surface-dressing and cleanings till a total change is decided upon. With a thorough preparation at first, groups, beds, and borders will remain in excellent order for many years.—W. R.

THE ARBORETUM.

PICTORIAL OAKS.

PICTORIAL trees, of an ornamental and beautiful character, are invaluable in working out fine effects in the landscape, and as yet this part of gardening is only in its infancy. There are two beautiful Oaks that are of such great value as ornamental trees, that there is much need for rescuing them from the comparative oblivion which surrounds them. One of them is that fine form of the bitter Oak known as the Duke of Bedford's variegated Oak; it is an improvement on *Quercus Cerris variegata*, and originated as a sport at Woburn Abbey, the seat of the Duke of Bedford. The large deeply-cut leaves of this variety are boldly and handsomely edged with white; the growth is dense, and the habit elegantly pendent. At the Hertford Nurseries of Messrs. E. B. Francis and Co., and also at the Cheshunt Nurseries of Messrs. Paul and Son, capital examples of this beautiful Oak can be seen. An excellent companion to this is found in the black-leaved North American Oak, *Quercus nigra*, which has bright red leaves like a copper Beech, and is quite a striking object. Probably the reason why this handsome Oak is not more common is found in the fact that it is very difficult indeed to propagate, and it can only be done with anything like certainty by means of inarching. Attempts have been made with grafting, but it is a very precarious process, as out of 500 grafts Mr. George Paul said he had only succeeded in getting five or six to take. With these should be associated some of the beautiful cut-leaved American Oaks, some fine examples of which are growing in the park of Bearwood, Wokingham, the residence of Mr. John Walter, M.P. These are truly pictorial trees, bold and handsome in growth, and forming noble objects. D.

Thinning and Moving Conifers.—I have lately taken a place which has been thickly planted with Firs of different kinds by my predecessor, and they now require thinning. As an illustration, a bank about 200 feet long, separating the kitchen garden from the orchard, has been planted with four rows of Spruce and Scotch Firs within a space of 12 feet, the trees being 6 feet apart in the rows. Some of the trees are now 10 feet high, with a 6-feet spread of branches. I am desirous not only of thinning them out, but of using those that are moved for planting elsewhere. Will you kindly advise me as to the best time and method of doing this, so as to ensure, if possible, that the trees that are moved shall live, and that those that are left shall not be killed by the operation. They have been planted, I believe, some five or six years, so the roots must have spread.—A SUBSCRIBER. [Mr. David Syme, who has had large experience in such matters, advises as follows:—"The plantation in question may be thinned any time, during open weather, between the middle of November and the middle of March. We have seldom seen Firs that have been thinned out, of the age and size stated, do any good after being transplanted, especially if lifted so as not to interfere too much with the roots of the remaining trees. More satisfaction will be obtained by planting the largest sized Firs usually sold in nurseries."]

Trees in the London Squares.—Londoners might be taunted with thankfulness for small mercies if they ventured to boast that there are in the heart of London trees as green, as healthy, and as well grown as any to be found around the ancestral homes of England. Any one, however, who will divest his mind of their present surroundings—houses, railings, and a dusty road—imagine streams, swans, and meadows instead of these, and then take a good look on a hot afternoon at the Plane trees in Berkeley Square, must acknowledge that they would be worth noticing even in the country, so fresh and green are they, and so vigorous withal. The Plane is in London the right tree in the right place. The conditions so unfavourable to vegetable life in a large city do not appear to affect it in the least, either in growth or beauty, and it seems a pity that any other tree should be planted, at least in some parts of the metropolis. The Elm is a decided mistake in London; its foliage, never of a bright green, becomes brown and shrivelled long before the summer is over; the Beech and Oak fare no better, and though the verdure of the Acacia remains as fresh as that of the Plane, we have no evidence, as yet, that it will flourish to an equal degree. It is, therefore, matter for regret that more Plane trees were not planted when Berkeley Square was provided with these most effective ornaments, but it may be hoped that so successful an experiment will be repeated as occasion offers.—*Pall Mall Gazette.* [Planting the Lime is the greatest mistake in London planting. The Acacia is of proved excellence; the Plane is well known as a noble town tree. Planters should aim at variety, and may obtain it without using either the Elm or the Lime, as many other trees do well in towns.]

Rare Shrubs Acclimatised on the coast of Wicklow.—

I have seen many things mentioned as rarities in the mild climate of the South of Ireland that can be easily matched on the Wicklow coast, 500 feet above the sea level, and it may be encouraging to know what can be done here, where during the east winds in spring we, as well as our plants, are sometimes "hard set to live!" I could give a pretty long list of evergreen plants that have long been acclimatised here, such as *Olea excelsa*, *Pittosporum Tobira*, and others, that were supposed twenty or thirty years ago to require the protection of glass, and newer shrubs, such as *Eugenias*, and the *Desfontainea spinosa*, not only grow in the open air to a good size, but with merely the help of a "collar," or short piece of draining tile, I have been very successful in striking cuttings of these, as well as the beautiful *Clethra arborea*. Small amateur gardeners, like myself, will find this a very useful way in which to strike Honeysuckles and many other things in the open border.—PAXTONIA.

Lagerstroemia indica rosea.—It may interest some of your readers to learn that this beautiful rose-coloured flowering shrub which has hitherto been treated as a stove-plant, need no longer be considered as such, as it is almost, if not perfectly, hardy, having stood out in an open border throughout the whole of last winter, without any kind of protection, in the gardens of the Royal Society of Ireland, near Dublin, where it would doubtless have bloomed well this summer had not an inexperienced under-gardener, not knowing that it was deciduous, cut it down to the ground when he saw all the leaves had fallen off. Notwithstanding this severe treatment, however, the plant shot up vigorously from the root, and, when I saw it a week ago, had made shoots close on 3 feet in height, which were entirely covered with abundant healthy foliage, and in fact in every way looked in better health than my own plant of it, which has always received stove treatment, and is only brought down to the cool conservatory when about to open its lovely racemes of blossom, resembling pink frizzled paper, and which are the admiration of everyone who sees them. I may add that the winter climate of Dublin is, I should say, quite as severe as that of most parts of England.—W. E. G.

Myoporum album.—This elegant flowering shrub is well worthy of more general cultivation for decorative purposes than it receives, as it is free in habit and easily grown. It can be propagated, by means of cuttings made of the young wood, as readily as a *Geranium*, or even more so, for branches torn from the plant and thrown carelessly on damp sand or soil root freely in a week or two, and go on flowering as if nothing had happened to them. The plant grows from 12 to 18 inches high, having a central stem from which the branches fall gracefully on all sides. Both branches and foliage are of a deep green colour, studded with translucent tubercles, smaller, but not much unlike those of the Ice plant (*Mesembryanthemum crystallinum*). The flowers are borne in axillary clusters, and are something like those of a small-flowered *Eriostemon*; they are pure white in colour, and slightly scented. The plant is grown extensively in France for the Parisian flower-markets, where it may now be seen in abundance. It is not only a most profuse bloomer and elegant in habit, but it lasts in beauty for two or three months together during the summer time, and it may be easily cultivated in perfection in a cool frame or in the sitting-room window. Any soil seems to suit it; but a compost of fibrous loam, leaf-mould, and coarse sand is preferable to any other. Cuttings struck now will make fine little plants for next summer's flowering.—F. W. B.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Wood Paving in London.—The portion of roadway in Piccadilly between Berkeley Street and Albemarle Street, the paving of which is to be renewed, is now covered with wood paving, to be laid by the Improved Wood Paving Company, at an estimated expense of £1,190. The wood paving has been on trial for twelve months in the City, having been laid down from London Bridge to King William's statue. It is said there are no signs of decay, and the police state that they know of no cases of horses falling upon it since it has been laid down.

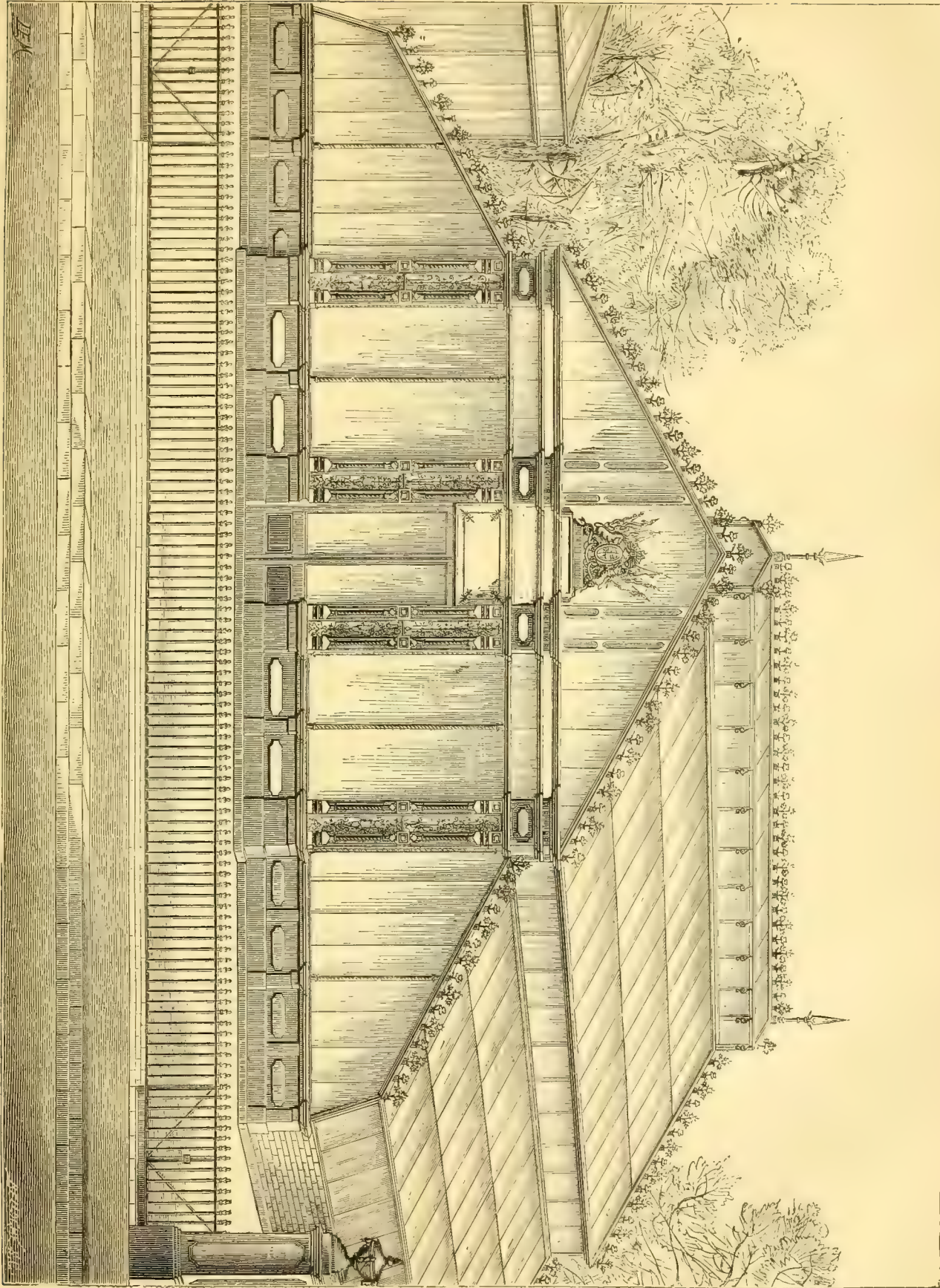
A fine Oak.—Staying for a few days in Northamptonshire, last week, I had an opportunity of inspecting a fine old Oak tree, situated near Lovick, a village 2½ miles from Thrapston, where it forms a very striking object. It measures 40 feet in girth at the base, and 27 feet in girth at 5 feet from the ground, which size it maintains for some distance up the trunk. Though apparently healthy, decay, I am sorry to say, has begun its deadly work, but it must be years before dissolution has been completed.—F. MACKNESS, *Hampstead Park, Berks.*

The Stag's-horn Sumach (*Rhus typhina*).—This may now be seen in splendid condition in some of our west-end squares, its beautiful foliage intermixed with that of other trees and shrubs, giving the whole quite a tropical appearance. Indeed, I have seen no sub-tropical foliage this season equal to that of this Sumach, and when it puts on its varied tints in the autumn, it surpasses all the plants with which I am acquainted. This is not an uncommon plant, but I have never before seen it so skilfully planted as it is in Thurlb Square, where it is extensively used, and with good effect.—PETER WALLACE.

MR. WILLS'S NURSERY, BROMPTON.

Of all the nurseries recently established in the vicinity of London few have acquired greater popularity in a limited time than the one of which the following is a short account. Under the management and personal superintendence of Mr. Wills, the business, which is mainly devoted to the cultivation of plants suitable for the decoration of halls, ball-rooms, and places of that kind, has increased rapidly. Few plants are cultivated in this establishment that are not sufficiently hardy to bear frequent removal and that will not withstand the effects of gas-light. Amongst those which Mr. Wills finds best suited for this purpose, we may notice *Dracænas*, as *D. congesta*, *D. (gracilis) marginata*, *D. Cooperii*, and *D. terminalis*, with its varieties. *Ficus elastica* is also largely employed, together with choice Palms of all kinds, *Aralias*, *Araucarias*, *Ardisias*, and *Cycas revoluta*; the last plant is hardy enough to bear a good deal of rough usage, and always has a graceful and fresh appearance. Some plants are here used by the thousand, notably the fresh green *Selaginella hortensis* as edgings and margins for masses of Ferns, Palms, *Dracænas*, and other fine-foliaged plants. Mr. Wills informed me that he pays annually some £400 for his supply of this plant alone, and he has now just finished building two ranges of narrow pits solely devoted to the growth of this plant in small pots. Other small plants used in quantity for edgings and borders are *Festuca glauca*, a very elegant Grass of a glaucous or pale blue tint, perfectly hardy, though well suited for pot culture, and *Isolepis gracilis*, one of the most elegant of all Grass-like plants. Grown in small pots it droops gracefully on all sides, completely hiding the pot, and, being of a fresh green tint, it is very ornamental. *Ficus repens*, together with *Myrsiphyllum asparagoides*, *M. undulatum* with larger foliage, *Asparagus scandens*, and *A. consanguineus* are found extremely useful, furnishing, as they do, quantities of elegant fresh green spray for wreathing pedestals, stems of ornamental vases, or for dinner-table decoration. Large quantities of *Cyperus alternifolius* are likewise grown here, on account of its being found to be not only graceful in habit, but durable, and well suited for general decorative purposes. *Daphne indica*, too, is largely grown for the sake of its delightfully fragrant flowers. A fine collection of such Ferns as are adapted either for supplying cut fronds or for general decoration may also be found here in quantity. Among them *Davallias* and *Adiantums* are grown by the hundred. Of *Adiantum cuneatum* alone I noticed between 2,000 and 3,000 plants, and nearly 500 fresh and vigorous plants of the lovely *A. Farleyense*, which, when well grown, is one of the finest of all Ferns. Plants of this species grow here literally "like weeds," and Mr. Wills informs me that well-matured fronds of this are not only effective in floral decorations, but that they last longer, after being cut, than those of most other Ferns in cultivation. I noticed many fresh healthy plants of the chaste *Eucharis amazonica*, one fine specimen of which was just throwing up from twenty to thirty spikes of pure white flowers, and several little plants, in small pots, were each bearing one spike. A fine pair of specimen plants of the lovely winter-flowering *Cœlogyne cristata* are just making a vigorous growth, that promises well for next season's bloom. Among the Ferns some noble trunks of *Dicksonia antarctica*, about 10 feet high, call for special notice, and two fine imported trunks of a new *Todea*, in the way of *T. intermedia*, are throwing up splendid fronds nearly a yard in length. One of the finest of all the *Aralias* for decorative purposes, either in pots or for plunging outside during summer, is *A. pulchra*, a vigorous grower, having oblong shining leaflets five or six inches long, arranged round the end of a stout footstalk a foot and a half in length. A splendid batch, consisting of 500 *Ardisia crenulata*, each plant about a foot high, looked fresh and healthy, and was well set with berries. When grown in small pots, few plants are more effective than this for winter decoration. Some faint idea of the enormous trade carried on here may be inferred from the fact that between 20,000 and 30,000 flowering and foliage plants are used every week during the height of the London season, besides quantities of cut flowers of the choicest description, which are required for wreaths, bouquets, and floral decorations of all kinds. The annexed is an illustration of the new conservatory as seen from the Brompton Road,

MR. WILKS'S NEW CONSERVATORY AT BROMPTON.



but besides this Mr. Wills has ten or a dozen other houses in which plant growing and propagation are continually being carried on; even these are unable to supply the enormous demand made on the establishment, and the erection of additional houses is in contemplation. The conservatory in question is nearly entirely constructed of iron and glass. The stages and benches inside are of concrete, set on iron supports. This house, together with its side wings, and two large ranges behind, were erected by the Imperishable Hothouse Company, under the direction of Mr. Ayres, and are well adapted for plant growing, a fact amply borne out by the vigour and healthfulness of their contents. F. W. B.

MM. CHANTRIER'S NURSERIES AT MORTE FONTAINE.

MORTE FONTAINE is a little village about 30 miles to the North of Paris, and is chiefly remarkable, from a horticultural point of view, for the above establishments. The soil in the neighbourhood is a warm sandy loam, resting here and there on pure white sand beds, and the surface is agreeably undulated so as to afford a variety of aspects. The climate is both dry and hot during the summer season, a remark that applies with equal force to many other districts around Paris, where the sun's rays come down through a cloudless sky for days together, and rain does not fall for several consecutive weeks. This matters little to the French horticulturist, who, more familiar with the use of india-rubber hose and the watering-pot than with the spade, supplies moisture in abundance, and thus not only counteracts natural disadvantages, but also modifies them so as to contribute in no small degree to his success. Like our own market growers around London, MM. Chantrier have adopted low span-roofed houses, and numerous low pits or frames, from which they turn out decorative plants by the thousand all through the season. A very fine selection of decorative plants are here grown, though the speciality, in the way of pot plants, lies between *Dracænas* and *Ficus*, both genera being grown in quantity and great variety. A few of the best *Bromeliads* are very ornamental, and are cultivated here, while there is an extensive and well-grown collection of the best decorative Ferns and Palms. *Dracænas* are propagated early in the spring by taking off the breaks from old leggy specimens, headed down, and plunged in a genial bottom-heat, so as to induce them to throw out young growths, which are then taken off and rooted in the ordinary way, though the atmosphere of the bed in which they are plunged is so moist and genial that shoots not unfrequently throw out roots before being taken off the stems. After they are rooted and have become in some degree established—say about the latter end of April or beginning of May—beds are prepared in the houses of fibrous peat, turfy loam, leaf-mould, and sand, and the plants are planted out at 12 to 15 inches apart. The atmosphere is kept at a genial heat, and moisture is supplied in abundance, both by the water-pot and syringe. Plants so treated grow with astonishing rapidity, making short-jointed sturdy growth and fine richly-coloured foliage. Some of them, treated as above, are now at least 2 feet high, and are noble specimens of good cultivation. These will shortly be lifted carefully and potted into pots about the same size as our 48's, but broader, and not quite so deep. After being potted, the plants are syringed and kept in a moist genial atmosphere until thoroughly established, after which they are sold for decorative purposes. The houses in which these plants are grown so well are shaded with lath screens, or sometimes with neat straw mats, which are extensively made in most large gardens on the continent during bad weather in the winter months. As the plants become fully developed, however, more sun is admitted to colour the foliage, and the plants are also gradually inured to a drier and cooler atmosphere, so as to be of lasting service for the decoration of drawing-rooms and corridors. Many species of *Dracæna* are much more hardy than is generally supposed, and here at Morte Fontaine hundreds of fresh little plants, in small 60 or 48-sized pots, were growing in common garden frames outside, with dung linings between, but no further protection or shade from the sun than that afforded by hurdles of thin brushwood supported

on vertical stakes a foot or two above the plants. These plants were pictures of fresh and vigorous health, and much better adapted for general purposes of indoor decoration than plants coddled in hot plant-stoves, a custom so common with us at home. If I am not mistaken, the coal question will do more lasting good to gardening than anything else we have experienced for years, not only by increasing the taste for hardy or half-hardy plants, but also as being likely to cause us to learn, by direct experiment, what plants really will grow well without the wasteful and troublesome fire-heat we have been in the habit of giving them of late years.

Amongst the *Dracænas* cultivated here, were fine batches of *D. (stricta) grandis*, a variety much in the way of a bright-coloured *D. terminalis*, but with much broader foliage; *D. Mooreana* and the creamy-foliaged *D. Guilfoylei* are also on trial, for French market growers, like our own, give every new plant a probationary term before they propagate it in quantity. *D. Cooperii*, though one of the most graceful of all the group, is not a favourite, and it does not find a market so readily as the other kinds. One of the finest and hardiest is *D. nigro-rubra*, which has bright rosy-scarlet foliage margined with deep purple, and is of a robust and vigorous habit. *D. braziliensis* is a robust green-leaved kind, not unlike *D. reginæ* in habit, the leaf being curiously twisted at the apex. *D. robusta* is a variety similar in many ways, but has narrower and more horizontal foliage. *D. (fragrans) fragrantissima* has closely arranged light green foliage, not unlike that of a *Nidularium*, and is a compact plant, though not grown in quantity. Leaving the Dragon trees, we find *Ficus elastica* by the thousand, partly in frames and partly plunged in a bed of ashes outside. In both cases the plants are protected by light hurdles, which, while giving the requisite amount of shade, protect the plants from sudden hail storms, which not unfrequently injured a great many valuable plants before their use was adopted. Besides *F. elastica*, there are several other species of *Ficus* equally as handsome and valuable for indoor decoration, and of these *F. Chauvieri* is one of the best. It was introduced about 1867-8, and is now largely grown by MM. Chantrier. It is easily distinguished from *F. elastica* by its broader and shorter foliage. *F. Porteana* is a fresh green-leaved species, well worth growing for variety, as are also *F. Bengalensis*, with bright, shining, heart-shaped leaves, arranged horizontally, and *F. amazonica*, a variety conspicuously furnished with pale creamy stipules at the base of the leaves. The leaves themselves are of a fresh bright green colour, with pale veins, and the young foliage is tinged with shining purple round its margins. All these may be propagated and grown as easily as the common *F. elastica*, and form an agreeable variety. The general run of the *Dracænas* fetch from 2 to 4½ francs each, wholesale; but the finest plants of *D. stricta*, which is the favourite, bring as much as 8 francs each, and sell for twice that amount retail. The India-rubbers bring from 2 to 5 francs each, according to size and quality, and, reckoning the franc as tenpence, it will be seen that growing these plants must be a remunerative occupation when well carried out.

The stoves are well adapted for growing small plants, being low, and partly sunk below the ground level. The paths are of a convenient width, and the plants are arranged close under the glass on the side beds and stages. The shading consists for the most part of whitening; or mats formed of reeds or straw, can easily be placed over such plants as require it from the outside. We here noticed several interesting *Bromeliads* in good condition, and several plants of *Bletia hyacinthina*, or *B. patula*, which are making a free and vigorous growth suspended in small pots close to the glass.

Guzmania tricolor is worth adding to every collection of *Bromeliads*, having gracefully re-curved shining foliage, and an erect spike of pointed green bracts, striped with black, from which snowy white flowers protrude. The bracts at the extreme apex of the spike are of a bright scarlet colour, and the whole plant is very effective, even when not in flower. *Bilbergia Rodocryana* has broad curved foliage, of a fresh green colour above, striped with silver below, and bearing an erect conical spike of rosy-purple flowers, with pale rosy bracts. *Æchmea fulgens* is a fine decorative plant, lasting in flower for weeks together, and having gracefully recurved bright green

foliage. *A. fulgens miniata* is a larger flowered and brighter-coloured form, still better worth cultivation.

A plant of *Dorstenia caulescens* has green oblong foliage, marbled with silver in the centre, and purple receptacles. This species closely resembles *D. argentea*, and is useful for stove decoration when small. *Philodendron pinnatifidum* makes a fine plant for a large stove, bearing large lacinate foliage on long purple-spotted stalks. The leaves of this plant are, often 3 feet or more long, and have a very noble appearance. We noticed two plants specially adapted for covering the walls of a moist stove, the one being *Anthurium violaceum*, a scandent species with oblong-pointed leathery leaves and numerous clusters of white fruit, tinged with purple-violet; the other, *Philodendron Lindenii*, is a trailing species with hairy stems, and cordate foliage of a light velvety green colour, mottled with black. A well-grown batch of *Selaginella palmata*, a variety much resembling *S. umbrosa*, but more erect, is well worth notice, being one of the finest of all the group for pot culture and in-door decorative purposes. The plants here are from 12 to 16 inches high, of a fresh green colour, and readily find a market of two to three francs each. Several species of *Pandanus* make good plants for decorative purposes when well grown, and I may here allude to an ingenious method practised here, in order to induce plants to produce their suckers. A short poker or iron bar is heated red-hot, and plunged down the centre of the plant, so as to

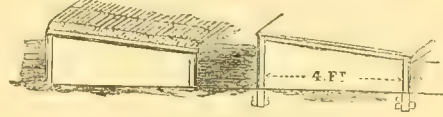


Mirabelle Hâtive Plum.

stop the central growth, and as a natural consequence the vital force of the plant is then diverted to the production of lateral shoots and suckers, which are taken off and propagated in the ordinary way. In one of the houses we noticed a very distinct form of *Dracæna Draco*, named *Ehrenbergii*. It has drooping strap-shaped foliage of a decided glaucous colour, and is valuable for conservatory decoration, as a contrast with the green-leaved form.

In the grounds outside I noticed a nice collection of *Magnolias* in excellent health and vigour, including fine specimens of *M. glauca arborea*, 20 feet or more in height, and covered with its deliciously perfumed flowers. A plant of *M. glauca pumila*, quite as old as the last-named specimen, is barely 4 feet high, which proves it to be a well-marked form. Like its congener, it flowers freely, and is much more convenient for conservatory decoration on account of its more manageable size. A noble tree of *M. macrophylla* is at least 20 feet high, and has foliage nearly 2 feet long by half that breadth. This species has borne flowers here over a foot across, and richly scented young plants of this species bear very fine foliage, and it is well adapted for sub-tropical gardening on warm soils in sheltered positions. Another form, *M. tripetala*, has also very fine foliage, and may be used in similar positions. Camellias, in all the best varieties, are here as fresh and healthy as possible, plunged on the north side of a shady fence, and are show-

ing flower-buds abundantly. Thousands of seedling *Rhododendrons* are growing nicely on raised platforms or beds of fibrous peat, and a dozen or two of fine unnamed seedlings are being grown on for exhibition next year; one or two varieties, I was told, are striking and distinct. A very large broad-leaved form of the common Laurel is well worth growing, the leaves being nearly as large as those of *Magnolia grandiflora*; and a little plantation of *Salisburia adiantifolia* is very effective, and many of the plants promise to make fine specimens. MM. Chantrier are just now turning their attention to fruit culture, and their fine collection of fruit trees



Low Plant Frames.

are in excellent order. Upwards of 20,000 fruit trees, consisting of Pears, Apples, and Cherries, have been recently budded and promise to do well. An expert propagator inserts 180 buds per hour, or three per minute, with facility, and a man follows and ties in the buds nearly as quickly. Speaking of fruit trees, I here noticed standard Apricots 20 feet through and very healthy, while a tree of the *Mirabelle Plum* was literally loaded with its small golden yellow fruit which are just now ripe. It is a first-class variety for preserving, and deserves more general cultivation in this country than it at present receives. Some beds of the *Alpine Strawberry*, or *Fraisier des quatre saisons*, are bearing an abundance of fruit which is also fine in quality and of good flavour. This variety is worth culture, as it supplies a few dishes of fruit after the late Pines are over. Part of the nursery is devoted to hardy evergreen shrubs and deciduous trees, but decorative plants are the great speciality here, and the visitor who calls at Morte Fontaine on his way to Paris will find energetic and successful cultivators in the Messieurs Chantrier, both of whom have acquired part of their experience in our own public gardens. F. W. BURBIDGE.

WATER-SUPPLY.

A Prize Essay, by the Rev. J. CLUTTERBUCK.

ALL water-supply, whether surface or subterranean, whether naturally issuing above ground from springs, or artificially reached by wells or shafts, is derived from the rainfall. Therefore, in treating of the possibility of improving our water-supply, the question resolves itself into the economical use or application of quantities which vary, but of which the amount may to a certain extent be ascertained. Though rainfall is reduced to, and treated with reference to, averages, the economical increase of water-supply has rather respect to a minimum, or to quantities, in excess at certain seasons, to be made available when the ordinary average supply falls short. Taking Mr. Symon's published averages of rainfall in England at 30 inches, by excluding all above 30 inches as beyond the limit of this inquiry the average is reduced to about 25 inches, the minimum at any place being 16.91 inches. These facts should be noted, though the variations in the quantity that falls at any given season make it difficult to base any calculation on the gross quantity falling during the year. Subterranean water depends on the quantity percolating below a certain depth; the gross rainfall has a greater influence on surface supply. The difficulty alluded to is shown in a remarkable manner by the records of Dalton's gauge, kept by Mr. Dickenson, which registers the water precolating 3 feet below the surface. The average rainfall at the same place for 29 years was 22.5, the percolation 7.5; the ten years ending 1863 gave 25.8 total fall, percolation only 5.9; showing that in the longer period the average summer rainfall was in arrear and that in winter was in excess, while in the shorter period the case was reversed.

It will be necessary to notice separately surface and subterranean water. The former comprehends all water retained in ponds whether natural or artificial, that received or collected from roofs of buildings, stored in tanks and the like, or water thrown from the surface of the soil; subterranean water, all that sinks below the surface, accumulates in permeable strata, and thence issues in springs where vent is given to it.

SURFACE WATER.

First, as to water collected from the roofs of buildings. This is obviously a simple process, requiring good and well-arranged spouting, with sufficient tank storage. In retentive soils, tanks for

cottages may be made at a small cost by sinking casks into the ground, though brick-built tanks will necessarily be the cheapest in the end; this is one of the improvements in cottage homes which never should be omitted, even where well water is abundant. Open ponds, sunk into a clay subsoil, will, at certain seasons, receive the soakage from the surrounding soil; even those which are artificially puddled retain their water in a way difficult to explain when the natural evaporation and artificial exhaustion are taken into account. This phenomenon, for such it may be called, is very remarkably illustrated by surface ponds on the highest ridges of the chalk downs, known as dew ponds.

DEW PONDS.

These are chiefly constructed on the highest ridges of the chalk range, for the purpose of supplying water during the summer months. Natural springs, as supplies, are out of the question on the summit of the chalk range, since the chalk water-level lies from 100 to 400 feet beneath these ponds. The site selected is generally at the highest elevation on the ridges or spurs of the chalk hills, where they can receive no run of surface water, though instances may be found where they are placed near roads on hill-sides, and so receive the run after heavy rains; of the former alone here it is proposed to speak, as they present phenomena not easily accounted for by recognised physical causes. These ponds are constructed by persons of experience and skill. At the spot selected an excavation is made in the surface of the chalk, either round or rectangular, from 30 to 40 feet or more in diameter, from 4 to 6 feet deep. The bottom, of a basin shape, is covered in portions with clay carefully tempered, mixed with a considerable quantity of lime to prevent the working of the earth worms. As the portions are finished they are protected from the action of the sun and atmosphere by a covering of straw; when the whole bottom of the pond is so covered with an efficient and impermeable coating or puddle, a layer of broken chalk is placed upon it to prevent its injury by cattle or other means. Their cost varies from £30 to £50. When all is finished, water is introduced by artificial means. If there is a fall of snow, this is collected and piled up in the pond, as the readiest and least expensive method of accomplishing the object. During the falling of the snow in January, 1865, with a strong wind blowing, flaked or wattled hurdles were so placed that the drifting snow accumulating against them readily filled a pond on one of the highest ridges of the chalk range of hills. Ponds so constructed and filled have been known for periods of twenty-five or thirty years never to become dry; the summer of 1864 was a notable exception, in which, during the months of April, May, June, July, and August, a less quantity of rain fell in the neighbourhood in question than for the thirty years preceding, and dew was noted deficient. A calculation, based on carefully obtained facts, shows that in 40 days, ending July 14th, 1864, a pond lost (by measurement of its surface and depth) 13,500 gallons of water; adding the known rainfall, 0.9, on the slopes of the pond—1,800 gallons—we have a total of 15,300. The collection of surface-water from drains in a clay subsoil, even where the contour of the ground favours such an arrangement, must be precarious. These drains do not run except after heavy rainfalls; ponds which retain their water during a long period might be filled by these means, but, in the absence of supply from land or other springs, the quantities so stored would be likely to fail. Pumping water from a stream would seem to be too obvious a remedy to need much notice; yet I may state that a large mansion, tenanted by several families in succession, lost its tenants for lack of good water-supply; until at length, under the advice of the writer, an effectual remedy was found by raising a supply through filtering-beds into a tank from an adjacent and frequently turbid stream.

LAND SPRINGS.

Land spring is a term generally applied to sources of water which are found in or flow from superficial beds of gravel or drift, lying on an impervious substratum. Since many districts throughout England are entirely dependent on such sources for their supply of water they require further notice. Very many of our most ancient towns and other places of early habitation are placed on drift-gravel, probably from the facility with which water is thence obtained. The older part of London, and the city of Oxford, on different geological formations, are noteworthy examples of towns so supplied, until they were extended beyond their ancient limits, or until these sources, as is often the case, became tainted by infiltration from sewers, cess-pools, and the like. Most of the higher ground on the London clay, such as Hampstead, Highgate, Harrow, Bushey Heath, and the Bagshot district—where a better defined formation overlies the London clay—are examples of this kind of supply. In the Bagshot sands, in consequence of their great depth and wide development, by taking advantage of the levels at which water is thrown out by bands of clay alternating with the sand-beds and by turning to account the undulations of surface, large lakes or ponds are formed, such as

Virginia Water. At Bear Wood, a dam being thrown across a valley, the water collected in an ornamental lake serves to drive the machinery of the Home Farm,—an example of economising waste water which is worthy of especial notice. In the London and Hampshire Basins this character of supply is not entirely confined to the limits of London clay *in situ*, but extends to the higher ridges of the chalk, which are frequently capped with traces of the tertiary formations, so that water is frequently retained in gravels by which they are covered or upheld in surface ponds. The chalk district is, therefore, marked by the gathering of the population either on these higher levels or else in the valleys in which run the streams which issue from the adjacent chalk stratum. In the former of these a rigid economy in the case of water is forced on the consumers, as, on the failing of the supply, no resource is left but the streams in the valleys, or very deep wells, from which water is necessarily raised with great labour. No district suffered more from lack of water, during the summer of 1864, than the higher ranges of the chalk, from the failing of the dew ponds on the downs and all other surface supplies. The failure being due to the quantities actually drawn from them suggests an increase in the number of these ponds, or their adoption in localities where they have not been tried, especially where they would be easily formed in the tenacious soils found on the upper levels. There is sometimes a waste of water in these localities where it might be turned to good account. The beds of sand or gravel and the clay on which they rest, are frequently drained by means of shafts or dumb-wells, sunk through them to the surface of the chalk, into which the water freely sinks from the drains which converge to them as a central outfall. Necessary as draining is, this water might often be stored in ponds sunk through the gravel into clay, with an arrangement of pipes to prevent its rising above a certain level, or subterranean tanks might be formed where the clay is of sufficient thickness below the gravel. Where the beds of gravel are deep and extensive, it is obvious that water may be led away from a hill-side and form a perennial stream of the greatest value. This is well illustrated on the well-known Tiptree Hall Farm. When first occupied by Mr. Alderman Mechi, land-springs issued from the slightly rising ground to the north of the house, the weepings of which generated a peat bed. Deep drains were driven into the hill-side, cutting through the margin of the gravel into the clay beneath, whence so large a quantity of water was gathered into one head as to supply all the ordinary wants of the homestead, and furnish a volume sufficient to carry out in all seasons the system of irrigation co-extensive with the farm, whilst its overplus carries health and comfort to a once fever-stricken district in its course below. As the utilization of this water is instructive, so in the source whence it flows a lesson may be learned as to the geological and physical conditions under which a like supply may be turned to good account elsewhere. The village of Tiptree stands on an extensive bed of drift-gravel and sand, resting on the tertiary clay, naturally drained by streamlets which flow down the shallow valleys or depressions by which it is flanked or intersected. As in all such cases, the subterranean water is upheld in the soil at an angle above its outfall, varying with, and dependent on the closeness of the sand or gravel in which it lies. The water in the village wells stood, in the autumn of 1864, 16 or 18 feet above the artificial and over-flowing vent given to it by Mr. Mechi's drains. It is on record that, when these drains were first dug, many, if not all, the wells in the village were more or less affected. If the supply were less, and it was necessary for the sake of Tiptree farm and establishment to economise the supply (and this may serve as a general illustration), a well (call it of depression) on a large scale might be sunk near the centre of the gravel bed, whence the greatest body of water might be raised by artificial means, or allowed to pass by gravitation from the wells to the lower levels by some simple contrivance providing for the shutting off the water at pleasure. Such sources of water, when practically perennial, are often said to yield an undeviating volume; a periodical gauging would show that the quantity is in the ratio of the natural exhaustion and replenishment by rainfall. It should be noted that sands and gravels are speedily replenished; as gravelly soils, from their silicious and stony character, preclude such an absorption of water as takes place in loams, chalk, and other substances after a period of drought. Careful observation and frequent measurements have shown that wells in sand and gravel are replenished by a heavy summer shower; whereas it requires from 2 to 3 inches of continuous autumn rainfall to replace the evaporation of the summer in the soils of a more tenacious character. No general rules can be laid down for dealing economically with sources or supplies of water held in drifts or gravels which flow above ground as landsprings, unless they are founded on the ascertained geological condition, whether of the gravel-beds themselves or of the surface of the clay on which they rest. The gault, Kimmeridge, Oxford, lias, and other clays—which are of the character of marls, as in the new red sand-

stone—present, when their surface is exposed, a corrugated character. The Keythorpe system of drainage is based on this fact; if we may judge by the present river action on the gault in the valley of the Thames, this condition has probably a fluvial origin. Be that as it may, the cutting through one of these subterranean tanks or ridges will often lay a large tract immediately dry. This was the case in the city of Oxford, when a system of deep sewer-drainage was attempted, by which the house-wells were laid dry through a considerable district, till the tank of clay cut through was restored by artificial means, when the water was restored also. When, under such circumstances the water-level has been affected, the wells have been sunk into the subjacent clay; but the water held in the clay is often so surcharged with mineral substances as to render it unfit for use. If the water is not too much reduced in the drift, the bottom of the well should be enlarged, as a sort of subterranean tank, rather than pierce the clay under any circumstances. The surface, or rather land-spring, supplies of water are often undervalued, and great expense is incurred in sinking to deeper sources.

ARTESIAN WELLS.

Dr. Buckland, in his "Bridgewater Treatise," defines artesian wells as "perpetually flowing fountains, obtained by boring a small hole through strata that are destitute of water into lower strata loaded with subterranean sheets of this important fluid, which ascends by hydrostatic pressure through pipes let down to conduct it to the surface." As there are very many cases in which the water does not attain the surface of the ground, the name artesian has been applied to such, because they do not present all the conditions in the above definition; besides which, their construction so far differs, that a shaft, as of an ordinary well, must be sunk below the level attained by the water, from which it must be raised by artificial means. All the deep wells in London are of this character. There is a very common impression that water may be obtained in any locality by boring, if it be carried to a sufficient depth. Immense sums of money have been thrown away in such attempts, and in other cases the quality of the water when obtained renders it unfit for use. These wells should never be sunk without a knowledge of the local geological conditions on which their success depends. The most experienced geologists may be deceived by anomalous conditions of the substrata, which cannot be foreseen. It may be useful to mention some localities and strata where boring for water is most likely to succeed or fail. It has been ascertained that water naturally rises in these wells to the mean level between the highest source of supply and the ultimate natural outfall. This is exemplified in the London and Paris basins; the one outfall being the River Thames below London, the other the sea at or about Havre. Under London the level has been depressed to the amount of 60 feet; at Paris the famous artesian fountain of Grenelle has been slightly affected by the newly-bored well at Passy. Water will be found to rise to the surface wherever the level of the surface falls below the angle described by the subterranean water-level. This, notwithstanding the unnatural depression caused by London pumping, is the case at Tottenham, Tooting, Uxbridge, and other places. The depth to which the borings must be carried varies considerably. Water will rise in artesian or artesian wells throughout the London basin, where the chalk is covered by the London or plastic clays. Though ruled by various outfalls, and disturbed in some cases by faults, the height it will attain may be made a matter of calculation: the great difficulty is the thickness of the upper strata, especially where the surface of the clays rises in hills and ridges, or where they are covered by the Bagshot sands. If, by way of example, a line from Basingstoke to Colchester be taken, where at the former place the water in the chalk stands 240 feet above Trinity high-water mark; at Stratfieldsaye, $6\frac{1}{2}$ miles distant, in a well sunk by the late Duke of Wellington for the use of the villagers, 300 feet down to the chalk, the water rises to within 15 or 20 feet of the surface, which may be 150 feet above Trinity high-water mark; at Bear Wood, 350 feet to the chalk, the water stands about 120 feet above Trinity high-water mark; at Cricklewood, where this line intersects that of the section given, the water is 60 feet above Trinity high-water mark and 270 feet to the chalk; at Tottenham, 70 feet above Trinity high-water mark, and 140 to the chalk; at Witham (the outlay here was £150), 306 feet to the chalk, water within a few feet of the surface, about 120 feet above Trinity high-water mark; at Colchester, 143 feet to the chalk, water about 5 feet above high-water mark. In the Hampshire basin, though geologically the same as that of London, the condition of the chalk, probably from greater disturbance, cannot be relied on as a source of supply for artesian wells. A well dug on Southampton Common to a great depth was a gigantic failure. Again, at Portsmouth Dockyard the chalk was reached at 400 feet, and pierced an additional 500 feet without success. Following our inquiry into the supplies to be procured by boring, according to the geological series, the next in order is the

gault clay, which occupies a rather narrow slip of country, more or less, from Dorsetshire to the Wash. It is also developed in the Isle of Wight, under the Sussex Downs, and in Yorkshire. The artesian wells at Cambridge, sunk through the gault into the lower greensand, are a notable instance of success. The water, once flowing to the surface, does not attain that level by a few feet; their depth is said to be from 130 to 140 feet. The water from wells sunk through the gault is slightly ferruginous, as might be expected from the nature of the greensand, whence it rises. At Grenelle, where there are the same geological conditions, the water is often used for hospital purposes, and it is a practice to place glass vessels in the flowing water, where they acquire a yellow tint. As the water in the lower greensand has no defined outfall, and as the depth of the gault clay varies, no rule can be laid down. The greensand will generally be reached under 150 feet, the water will seldom rise to the surface, therefore shafts must usually be sunk, into which the water will rise. This is the case at Hinxworth, near Baldock, and many other places where the geological conditions are the same. Care must be taken not to sink for water where the lower greensand is absent, as in many parts of Oxfordshire and the Vale of White Horse. Instances of failure have occurred at Tetsworth, where the gault rests on the Kimmeridge clay. As the gault clay underlies the escarpment of the upper greensand, or chalk, the most obvious source of water-supply to the surface of the gault is from the springs which flow from, or generally above the junction of these strata. Reservoirs might easily be formed for whole districts by the common and united action of landowners to secure water of the best quality. Water rises by gravitation from such a source to the top of Adwell House, near Tetsworth. The town of Aylesbury is now seeking such a supply from the chalk range near Tring. These valuable waters, which might in many places be far more profitably used, now run into the Ouse or the Thames. Next in order is the Kimmeridge clay. The same hindrance as arises from the absence of the greensand below the gault is found where the Kimmeridge rests on the Oxford clay. It was by overlooking this fact that at least £2,000 was needlessly expended in boring a well, over 500 feet deep, at the Lunatic Asylum near Aylesbury. At Abingdon there is an instance of water obtained by boring through the Kimmeridge clay into the coralline oolite, the whole depth, partly into the latter stratum, being about 60 feet. The water is slightly impregnated with sulphuretted hydrogen and iron, which it is believed is the case elsewhere. It supplies a drinking fountain in one of the back streets of Abingdon. No really successful instance of an artesian well in the Oxford clay has fallen under my immediate observation. Its widely-extended surface and position on the lower oolitic strata are physical features which point to it as lacking good water, and as likely to derive a supply by boring through it to the oolitic rock beneath. If the well or boring were carried deep into the subjacent rock and were perpetually flowing, the water might be cleansed of its impurities; but those specimens which I have met with and tasted have been hopelessly impure. Lower in the oolitic series there are instances of successful artesian borings. Thus at Bourn, in Lincolnshire, a large supply has been obtained from borings through the Forest marble and Bradford clays, to a depth of about 90 feet, whence the water overflows the surface. The distribution and presence of these clay-beds, and the frequent faults in the oolitic strata are so complicated, that it is impossible to lay down any rules for guidance. The same may be said of the lias clays which underlie the oolitic rocks. The marlstone, generally charged with water, which intervenes between the upper and lower lias clays, would seldom yield its water except to wells sunk in the ordinary way. At Chipping Norton the lower lias clay was pierced to the depth of 500 feet, in the hope of obtaining water from the underlying new red sandstone formation: the attempt was abandoned at that depth. Again, much the same may be said of the red sandstone formation, which forms so large a part of the surface of western England, though it may and often does yield its subterranean water when deeply pierced. At York water so raised was too much charged with iron and other mineral substances to be of any real value. The well known salt and other mineral springs in this formation point to the probability of their existence elsewhere. As artesian wells derive their supply from deep-seated or mainsprings, the existence of such sources of water has, to a certain extent, been anticipated, though it is quite necessary to speak separately of main springs.

MAIN SPRINGS.

As the term land spring is usually applied to sources of water flowing from superficial beds of drift, sand, or gravel, resting on impervious substrata, the term main spring usually indicates those deep-seated supplies found in the recognised geological formations, such as the chalk, greensands, oolitic, some beds of lias, new red sandstone, and any other stratum into which the water, falling on its surface, will freely sink through cracks or crevices,

forming beds of water, which rise in these strata till they find vent in valleys and depressions, and so form the natural perennial sources of rivers, or hidden supplies, which are reached by sinking shafts or wells, whence water is raised by artificial means. To advance our knowledge of the presence of these supplies, the localities and depths at which they may be found, their economical use, and the means which will afford increased facilities in obtaining them, is the chief object of this communication. The water-bearing formations above the chalk are generally of so superficial a character, and so complicated in their geological structure, that no definite rule can be laid down as to the water they contain. The elaborate Reports published by the General Board of Health on the proposed supply of water to London from the Bagshot sands in 1850, was a sufficient guide to those who wished to investigate that question. Though these sands in some localities are of considerable thickness, and from the alternation of the sands with clay beds throw out water at various levels, they very often represent sources of land springs. The chalk formation occupies a large surface of the east and south of England, and may be said (if we include the tertiary beds by which it is partially covered) to extend from the Chiltern range to the German Ocean. This is the chief source of the water supplied to the Thames and many other rivers. The water falling on its surface where exposed, or where covered with previous beds of gravel, sinks into this stratum and forms a subterranean bed of water, the surface of which has been called the chalk-water level. The depth at which water may be reached in the chalk may be made a matter of calculation. Take the level of any known spring or outfall, and then allow for an inclination of 10 feet per mile at least as the inclination of the water-line, it will be found that the surface-line of the subterranean water dips towards its nearest vent, the angle of inclination being ruled by the friction or resistance encountered by the water in its passage through the stratum. As the subterranean supply is replenished, this line will rise at an angle increasing with its distance from the vent. If the level of water in two wells situate in a line to the outfall be ascertained, the water will be reached in a well to be made midway between them at the mean depth of the two; and this will be true of all wells sunk in any water-bearing stratum at all like the chalk. The rising of water from the chalk in the upper levels, where the water level lies 300 or more feet below the surface, must be laborious and expensive. An Indian magnate, the Maharajah of Benares, intrusted to my friend, Mr. E. A. Reade, C.B., a sum of money to be employed for the benefit of the poor, on an object not of a religious character. He expended it on a well in the chalk, 358 feet deep, furnished with simple but most serviceable machinery for raising the water—large buckets, chains passing over iron sheaves, wound up by a winch and fly-wheel. Contrivances, such as a donkey-wheel, as shown at Carisbrook, are often used; but for a common well the simpler the machinery the better. Boring from the bottom of a chalk-well is sometimes resorted to with success; but it must be remembered that the water will not rise higher than the level at which it stands already in the well, though the bore-hole will quicken the supply. It is better, if the well has been made sufficiently deep, to enlarge the bottom in a bell-shape, or if a great quantity of water is required, to drive adits, if there seem no local reason to the contrary, in a direction from the known outfall of the water. The upper greensand immediately underlies the chalk and chalk-marl. Its development is very irregular; in some places it attains the thickness of 140 feet; in other localities it is scarcely to be traced. Like the chalk, it freely absorbs the water falling on its surface; its water-bed is ruled as that in the chalk, but it is far more accessible; indeed there is no stratum where water is more regularly distributed or purer in quality. In sinking wells in this stratum care must be taken not to pierce the gault clay below, lest the quality of the water should be affected. The lower greensand is separated from the upper by the impermeable bed of gault clay; the lower greensand is permeable to water. Though the beds of which it consists vary considerably in their condition and in their capacity of absorption, sometimes a continuous water-level may be traced. It is often necessary to enlarge the bottom of the well, to secure sufficient subterranean storage, as the wells, when exhausted are slowly replenished. Very great care must be taken not under any circumstances, to pierce the underlying Kimmeridge clay. If the Portland oolite underlies the greensand, and should the supply from the latter be insufficient, water may be sought in the oolite below, though the water of the greensand is usually of better and purer quality. When the Portland oolite overlies the Kimmeridge clay, the same caution will apply. Under no circumstances should the surface of the clay be pierced. There is a great similarity in all the oolitic strata as regards the supply of water, yet no strata present more difficulties and anomalies in the quantities yielded. This is to be attributed to the unequal thickness of the limestone and oolitic seams of rock, interlaced by beds of clay of

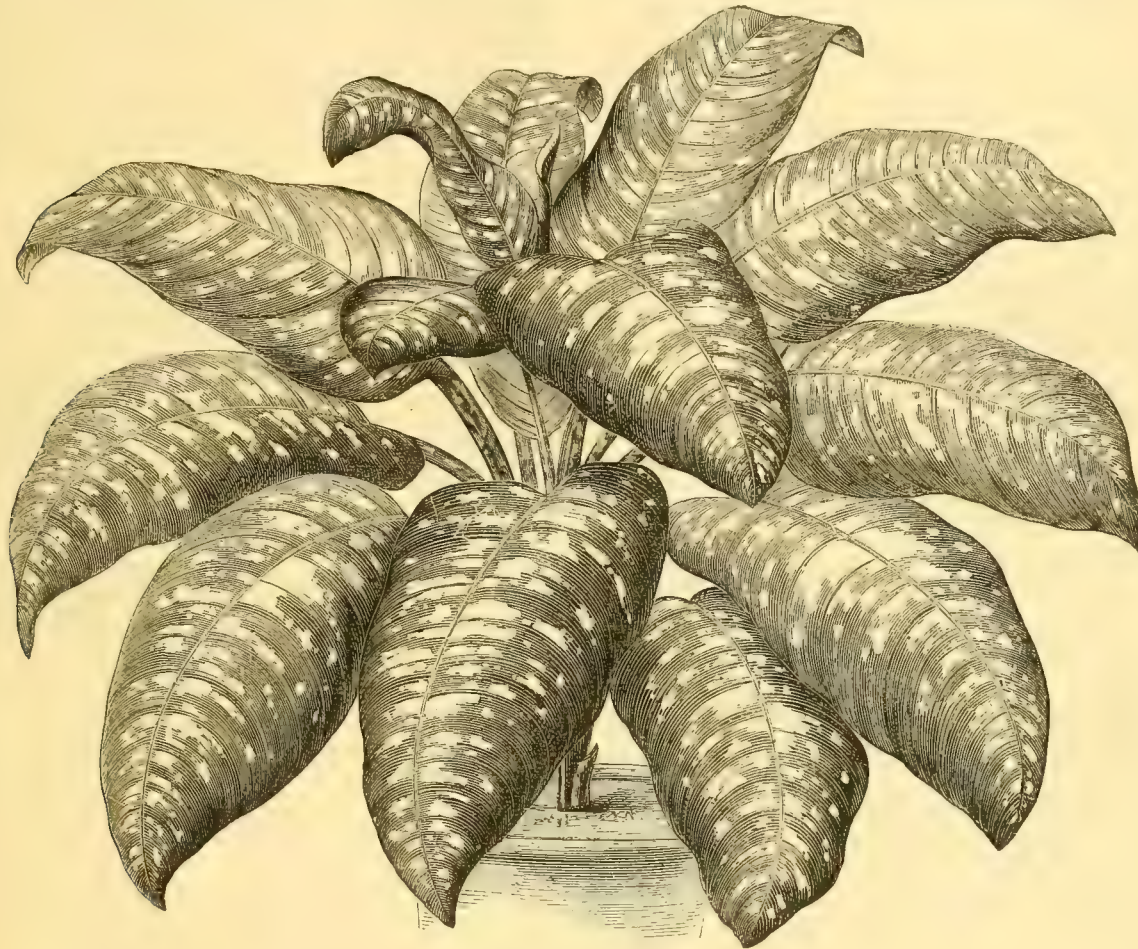
most variable thickness and power of upholding water. The Portland and coralline oolite are limited to a small area, and in many places consist merely of isolated patches, capping the surface of the Kimmeridge or Oxford clay. In such case the spot fixed on may materially influence the supply. In a known case it was desired to obtain water for a farmstead; a well was sunk to suit the convenience of the site on which the buildings were to be erected; the water supply was insufficient. It was pointed out that the surface of the clay dipped in a certain direction, and that the well should be sunk near the margin of the oolitic rock in the direction of the dip. This was done, and water was obtained in abundance. This principle should be kept in view in seeking a supply of water throughout the oolitic range and the upper beds of the lias, where permeable beds rest on clay whose surface dips in a known direction. The presence of water under such circumstances is marked by the springs which issue from the hill sides at the junction of these beds. The lower oolitic series, separated from the middle or coralline by the Oxford clay, which overlies the lias, is one of the principal water-bearing formations of England. Like the chalk, its surface is furrowed by frequent valleys, down which its waters find vent in perennial streams; though, unlike the chalk, its substance is interlaced by bands of clay of varying thickness, which throw out the water at every variety of level. These bands, besides the faults caused by disturbance, make it exceedingly difficult to determine the supply of water, and consequently the means which will afford the greatest facilities for obtaining it. It often happens that in one locality there are several distinct beds of water, either to be traced in wells, or to be seen, as indicated by springs issuing from the hill sides. Such, for instance, is the case at Stonesfield, in Oxfordshire, where three distinct beds of water are found at various levels, at about 15, 50, and 100 feet from the surface respectively; none, except the lowest, which rests in the lias clay, yielding a large amount of water, but each sufficient for ordinary domestic purposes. The only obvious way of increasing the supply to the upper wells is the enlargement of the lower chamber, care being taken to avoid the hazard of sinking below the surface of the clay at the bottom. Agricultural drainage often decreases the subterranean supply to these strata; yet water running from the surface of the clays, which often cover large tracts, sometimes sinks by natural swallow or swilly holes into the permeable rock beneath, at the margin of the clay. These natural features might be assisted by simple artificial means to the increase of the supply to these strata. Many of the valleys of this formation rest on upper lias clay. If, as in some cases, the base of the valley is the lower lias, the intervening marlstone, usually charged with water, adds another source of water to the district. Such valleys are well fitted for the storage of water, such as in the reservoirs which supply the summit-levels of the Oxford Canal, which have never yet failed. From the marlstone, as from the partings of clay in the oolite above, springs issue at so high a level above the foot of valleys as to enable farmsteads, other establishments, and villages, to be supplied with water by gravitation, delivered through pipes or open cuttings into troughs or tanks. Moreover the fall of water facilitates the use of hydraulic rams, by which reservoirs and whole establishments, as at Blenheim, Cornbury Park, Sarsden, and other places, are supplied with water at comparatively small cost. The delivery of water throughout the oolitic series favours the extension of this practice in a district where sinking for water through limestone and other rocks is an expensive process. It has been said that the marlstone intervenes between the upper and lower lias clays. This, if the lower beds of limestone or lias lime are excepted, is the only deep-seated source of water in the lias formation. The new red sandstone, beneath the lias, which forms so large a portion of the surface of England to the west, contains large quantities of water; but much of it is excluded from ordinary uses by the mineral salts and impurities with which it is charged. The levels at which it is found in the upper marls or in the substance of the extensive sand-rock varies very much: in some cases the underground passage of the water is very free, in others very much confined. The exhaustion by mines is also a cause of disturbance to the supply. Though very many towns are supplied from deep wells in this stratum, where large quantities are required, as at Liverpool, recourse is had to storage at higher levels in the older formations, where rainfall is in excess and the physical features of the country favour this arrangement. The variable quantities and quality of the water, as ruled by the local geological condition of the new red sandstone, make it impossible to point out any rules except those which are suggested by local experience for increasing such supplies for agricultural or domestic purposes. The increased rainfall, as well as the geological condition of the older formations, place the district to the west of the new red sandstone (as was suggested in the opening remarks) beyond the limit of this inquiry.—*Journal of the Royal Agricultural Society.*

THE INDOOR GARDEN.

DIEFFENBACHIA NOBILIS.

THIS is one of the most compact growing and effective species in the whole group of Dieffenbachias, and one which makes a handsome plant when grown in a close humid stove. Its thick and fleshy leaf-stalks are about a foot long, pale green in colour, transversely barred with darker green. The blades of the leaves are ovate or oblong and somewhat cordate at the base. They vary from 1 to 2 feet in length, and are about 6 to 9 inches broad, and of a deep green colour, prettily blotched all over the central portion with white irregularly confluent blotches, that contrast forcibly with the dark green margins. This plant is as easily grown as its congeners, and,

Pereskia aculeata; but as it cannot be employed unless previously prepared, a substitute may be found in detached pieces of *Cereus grandiflorus*. They have, however, the disadvantage, owing to their flexibility, of always requiring some kind of artificial support. Pieces of the desired length may be taken off, and potted among sandy peat soil of a fibrous character, putting a little sand round the cutting to prevent decay. The grafts may be inserted at once by making a downward incision in the stock with a sharp-pointed knife. Be careful to secure on the surface of the scion sufficient space to receive the ascending sap, which will render the union more complete. It would be a loss of time to use small scions, as large ones will take as freely, and they may be inserted down to within a few inches of the pot, which will add to the size and beauty of the plant. Plunge the pots in a bottom heat of from 75° to 80°, in a rather dry atmosphere, to preserve the wounded parts from decay. The opera-



Dieffenbachia nobilis.

in addition to a warm humid atmosphere, it prefers an open compost of fibrous loam, leaf-mould, and fresh peat, with the addition of a little coarse, well-washed river sand. When growing vigorously it requires a liberal supply of moisture at the root. It was introduced from South America by Mr. William Bull, and promises to hold a high place among Dieffenbachias. Like its congener, it is readily propagated by means of cuttings made of the fleshy stem, and, when liberally treated, is a robust grower.

Epiphyllum truncatum.—There is no plant with which I am acquainted, calculated to give a more cheerful appearance to a plant stove or conservatory than this *Epiphyllum* from the beginning to the end of November. Beautiful as it, when grown in a dwarf form, the effect is much more decided when it is treated as a standard, the flowers being brought up nearer to the eye. I am unacquainted with any stock better suited for grafting it on than

tion may be successfully performed any time before the plant begins to grow, which is usually about the beginning of March.—ALPHA.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Hæmanthus coccineus.—It is to be regretted that this fine bulbous plant is not more generally grown than it is. It bears a dense globular head of deep crimson-scarlet stellate flowers on a speckled scape from 15 to 18 inches in height, and has dark green strap-shaped foliage. It succeeds in a moderate temperature and is even more effective than *Nerine Fothergilli*, another neglected bulbous plant of easy culture and effective appearance. I lately saw the *Hæmanthus* flowering freely in La Muette at Paris and can recommend it to all who are fond of showy bulbs.—B.

Packing Exotic Ferns.—It may interest you to know that I have just received some Ferns from New Zealand, packed merely in common earth in a box, which, after a journey of four months in the hold of a sailing vessel with heated grain, arrived in perfect condition, with the exception of one or two very small tufted sorts. Amongst those in the best condition were *Adiantums* and *Todeas*. I mention this as it seems a general idea that they require careful and elaborate packing. Some from Brazil packed scientifically arrived in much worse condition.—E. L.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Conservatories.—Encourage the ripening of the shoots already made by a gradual decrease of moisture and shading and a free admission of air. Cut away all gross shoots not wanted, and any laterals that may now appear, and preserve only firm wood, for any other will, in all probability, not survive the winter; it is, therefore, better to cut it out at once than to allow it to remain. Conspicuous amongst conservatory plants now in bloom are *Roechea falcata*, a fine showy succulent; *Griffithia hyacinthina*, a scarce and pretty plant; Japanese Lilies, *Campanula pyramidalis*, red and blue-flowered *Salvias*, *Allamandas*, *Lagerstrœmia indica*, *Mesembryanthemums* of the Blandum section, the Cape species of *Pelargoniums*, double and single-bloomed *Zonales*, *Zephyranthes rosea*, *Sedum spectabile*, *Achimenes*, *Hydrangea paniculata*, *Fuchsias*, *Begonia Weltoniensis*, and other beautiful herbaceous hybrids, *Vallotas*, *Cockscombs* and other *Celosias*, *Oleanders*, *Gladioli*, *Trachelium cœruleum*, *Balsams*, *Asters*, *Gomphrena globosa*, *Zinnias*, *Cyclamen hederæfolium*, *Tree Carnations*, *Petunias*, *Heliotropes*, *Plumbago capensis*, *Cannas*, *Agapanthus umbellatus*, *Lapagerias*, *Tropæolum Lobbianum*, *Passion-flowers*, and many other hard and soft-wooded plants. By a judicious arrangement of these, together with *Coleuses*, *Iresines*, *Amarantuses*, *Centaureas*, *Euryas*, *Dracœnas*, *Ferns*, *Palms*, and other ornamental-leaved subjects, with the general stock of evergreens, a very pleasing effect is produced.

Stoves.—Here, as in the case of Conservatories, moisture and shade must be on the decrease, but we must bear in mind that evergreen plants should never suffer from drought, nor yet thick fleshy-rooted ones. The chief plants now in flower in stoves are *Allamandas*, *Clerodendrons* of the *Kämpferi* or *Fallax* section, *Dipladenias*, *Gesnera Seemannii*, *Cyrtanthera Pohlana*, *Meyenia erecta*, blue and white, *Hibiscus syriacus*, and *H. roseo sinensis*, *Scutellaria Ventenatii* and *Mocciniana*, *Euphorbia Bojeri* and *splendens*, *Tabernaemontana grandiflora*, *Rondeletia speciosa*, *Beloperone oblongata*, *Justicia carnea*, *Dichorisandra thyrsiflora*, *Angelonia salicariæfolia*, *Pitcairnia Olfersii*, *Rogeria gratissima*, *Eranthemum Ecbalium*, *Pancratiums*, *Crinums*, *Juanulloa parasitica*, *Reidia glauca*, *Methonica virescens*, *Oxalis Plumieri*, and many others. Amongst fine-leaved plants now so showy in our stoves few are more ornamental than small plants of *Brownia grandiceps*, the young leaves of which hang down gracefully, and are prettily variegated. *Rivinas*, and *Ardisias*, too, with their pretty berries, are very striking; and the pretty little *Mussaenda frondosa* and *luteola*, with their singularly coloured floral leaves, remind us that in a few more weeks we shall have the brilliant bracts of *Poinsettia pulcherrima* to give life and interest to our collections. Any stove plants transferred to the conservatory or other cool place to prolong their flowering period must not remain away too long. Encourage the growth of *Poinsettias* and *Euphorbia jacquiniæflora*, and give the plants a good dose, now and then, of liquid manure. Liberally treat *Aphelandra Roezlii*, and any young soft-wooded plants, and re-pot at once anything that may require it. Endeavour to have a succession of *Gesnera exoniensis* and *zebrina*, by forwarding some and retarding others. Pot off, if necessary, seedlings and rooted cuttings, but in some cases the latter may be left till spring. Have a good stock of *Begonias* for winter blooming, and regulate the growths of *Hexacentris mysorensis*. Do not cut off the spent flower-stalks from *Hoyas* or *Cyrtoceras reflexus*, as in doing so you deprive them of next season's flowers, for every old spur produces a truss the following year. Gradually dry off *Gloxinias*, *Gesneras*, *Achimenes*, *Caladiums*, &c., when they are beginning to decay, and place the pots where drip cannot reach them. In some cases *Caladiums* are treated as evergreens, but such a practice soon impairs their vigour.

Greenhouses.—*Cinerarias* and *Calceolarias* must be shifted as they require it, and kept cool, and old plants of the shrubby *Calceolarias* should be shifted to stand the winter. Propagate Chinese *Primulas* from cuttings in a gentle heat, and sow *Cyclamen* seeds in the same temperature and in pans in a light sandy mixture. Keep established *Cyclamen* plants near the glass in a light and airy house; and, in order to dispel damp and to maintain an equable temperature, a little fire-heat at night with ventilation at the same time should be kept up; gently syringe them overhead every day. Shake Cape *Pelargoniums* out of their pots, and pot them afresh in smaller pots. Propagate *Hydrangeas* from cuttings in a close frame, and lift and pot some rooted layers of *Carnations* and *Picotees* for early blooming. Lift and pot a few strong crowns of *Neapolitan Violets* and place them in a cold frame. A few strong roots of *Lily of the Valley* may also be lifted, potted in rich soil and placed in a cold frame for a time, but afterwards they must be transferred to a moderately warm situation. Sow *Mignonette*, *Lobelias*, and a general stock of annuals for spring blooming and thin and shift lately-sown ones. Give manure-water

to *Chrysanthemums*, and keep the young plants in airy frames, but the elder and stronger ones should be kept plunged out of doors. Those planted out of doors bloom well in pots if their roots are cut a few days before being lifted and they are kept rather moist for a time. Gradually dry off Japan Lilies, *Erythras*, and *Brugmansias*, when they have done blooming and growing and when they present signs of fading. Re-pot seedlings of *Humea elegans* for next year's use, and sow seeds of *Campanula pyramidalis*, as soon as they are ripe, in a pan of light soil in a frame or greenhouse. Sow seeds of *Statice* and *Trachelium cœruleum* in gentle heat, and prick off the seedlings as soon as they are fit to handle. Propagate the finer kinds of *Conifers* by means of cuttings inserted thickly in 48-sized pots, or by means of side grafting on the common sorts. A close well shaded frame will be necessary for them; indeed the frame should be inside a close pit. No portion of the stock should be cut away until the scion has fairly taken. Graft the finer kinds of *Rhododendrons* on *R. ponticum*, and if the plants are too tall to be accommodated in a frame standing erect they may be partly laid on their sides. Remove all strong suckers from *Yuccas* and pot them in a loamy soil. Increase Japanese Maples by inarching and lift and pot rooted layers of the same. Bring a few *Aucubas* into a close house or very gently-heated pit in order to encourage them to ripen their berries a little earlier than they otherwise would do. A few plants of *Solanum Capsicastrum* may be forced a little earlier than the general stock, and those still in the ground should have their roots cut around so as to make them lift easier.

THE KITCHEN GARDEN.

Cabbages.—Prick out seedlings from the seed-beds on a border of somewhat poor soil, a few inches apart each way, as they stand the winter better when stiffly grown than when they are soft and gross. Such as are left in the beds for planting out at convenience must be kept thin, and the surface of the soil amongst them kept loosened so as to encourage strong short plants, for "leggy" ones are not only unsightly but very inferior in quality to short-necked ones. Plant out the strongest on well-prepared ground about 12 or 15 inches apart each way, so that in spring every alternate row and every other plant in the rows that are left may be drawn for Coleworts, leaving the others to remain to form young hearts. Vacant ground may now be trenched and ridged.

Cardoons.—Encircle the stems of the strongest with hay or straw ropes, and earth them up in order that they may get blanched.

Cauliflowers.—Sow for spring and early summer use in the open air about the first of the month, and in frames at the end of it.

Celery.—Earth this up when the soil is moderately dry, and when the plants require it. Water abundantly.

Chervil.—Sow a small quantity for winter and spring use.

Chicory.—Sow thickly every fortnight for small salads, and lift a few strong roots to place in the Mushroom house for furnishing blanched leaves.

Cress and Mustard.—Sow the curled and common Cress, and also Mustard in small quantities on a warm border according to the demand.

Endive.—Tie up to blanch such plants as are ready for that purpose, and plant out the green Curled and Batavian a foot apart on ridges and warm borders.

Kidney Beans.—After this month these cannot be obtained with certainty from the open air; therefore sow in old Melon and Cucumber frames in the first of the month, and also in the end of the month.

Leeks.—Earth up a little the farthest advanced of this crop, and transplant the remainder of the late sown ones.

Lettuces.—Transplant the hardy Cabbage sorts and also the Bath Cos, and tie up advanced plants a week or a fortnight before they are ready for use. Sow a few white Cos Lettuces in light soil in cool frames near the glass.

Onions.—Take up any yet in the ground, and store them as recommended last month. Hoe amongst and thin the last month's sowings.

Parsley.—The spring sowings will still be yielding a good supply, but, if the whole of the leaves are cut off a portion of the plantation, young leaves will be produced before the winter. The July and early August sowings may now be transplanted for the chief spring supply.

Peas.—To late crops of these give abundance of water in dry weather, so as to add vigour to the plants and to obviate mildew.

Potatoes.—Take up all Potatoes that are ripe, and store them in dry weather. In lifting, separate the smallest from the others; keep the medium-sized ones for "sets," and the large ones for culinary purposes.

Radishes.—Sow in the first half of the month on a warm

border, and towards the end of the month make another sowing in a frame.

Spinach.—Make a sowing for winter and spring use, and hoe and thin the crop sown last month.

Tomatoes.—As soon as Tomatoes begin to colour, they should be picked off the plants and placed in frames near the glass, fully exposed to the sun. If left on the plants, fix lights in front of them so as to assist their ripening.

Turnips.—Hoe and thin the late crops.

SINGULAR INSTANCE OF DIMORPHISM.

A VERY remarkable instance of dimorphism in *Rosa cannabifolia* is recorded by M. Carrière in the current number of the *Revue Horticole*. M. Carrière states that he possesses some specimens of this plant which for many years have uniformly presented only the characteristics of the variety—viz., smooth shining bark; linear-elliptical, dark-green, finely-toothed, almost smooth leaflets; and double, or nearly double, flowers, less than 2 inches in diameter, with small narrow petals, irregularly slashed or cut on the margin, and of a yellowish-white or sulphur colour, somewhat resembling that of the Banksian



Singular dimorphism in the Rose.

Rose. This year, however, M. Carrière was surprised to find that two of his plants (vigorous specimens) had each produced a branch bearing an abnormal shoot, as represented in the accompanying illustration. This shoot, which is shown on the left-hand side of the figure, was covered with strong hooked prickles, at the base of each of which was a broad swelling in the bark; its leaflets were of a broadly-oval rounded shape, of a greyish-green colour, roughly wrinkled, and margined with broad crenate teeth; the flowers which it bore were single, nearly 3 inches in diameter, with broadly-oval pure white petals, which were wedge-shaped, and truncate and broadly cut or scalloped at the apex. M. Carrière considers that this is an instance of reversion or *atavism*, as the characteristics of the abnormal shoot are precisely those of *Rosa alba*, of which *R. cannabifolia* is said to be a variety.

In the garden of the Muséum at Paris, a specimen of *Cycas revoluta* recently produced sixty-seven vigorous and luxuriant fronds from the crown of the stem. This abnormally great development is said to be the result of the application of a small quantity of a certain new compost invented by M. Ville, one of the Professors at the Muséum.

OLD-FASHIONED FLOWERS.

FIFTY years ago the plesance of a small country house was never without colour and sweet scents from January to December. To the children of the present day such a poem as Mrs. Sigourney's "Flora's Party" is simply unintelligible. She only makes mention of one annual, and does not even include Geraniums in her invitation. It would not be easy to form a personal attachment for an annual. Hood knew this when he sang—

I remember, I remember—
The Roses, red and white,
The Violets, and the Lilycups—
Those flowers made of light!
The Lilacs, where the robin built,
And where my brother set
The Laburnum on his birthday—
The tree is living yet!

Annuals even "mock the exploring bee," and if we can say with Wordsworth, "it is my faith that every flower enjoys the air it breathes," we shall not be able to see unmoved the gardening operations of autumn. Perennials, though many die down into retirement for a time, do not leave us without hope. When spring clothes the trees and the fields in their brightest array; when the Primroses carpet the banks, and contrast so harmoniously with the wild Violet; when the white wood Anemone and delicate Wood-sorrel have already done their part in telling us winter is over—modern gardens are, in comparison, leafless and bare. They are sometimes spoilt by the beds of blue refusing to flower in time, and the scarlet Geraniums and yellow Calceolarias holding almost undisputed sway. As the green of mown Grass is not the proper shade to go with these gay plants, the effect of the want of the complementary blue is most distressing. Archbishop Trench observes on the enforced absence of a whole order of useful words from the hexameters of the classical period. Much in the same way, many of our prettiest flowers must be banished from a well-arranged Italian garden; an institution, too, primarily designed for a comparatively grassless region. They are either too tall, or their colour is too delicate. Nature is forced from her own harmonious minor into a major key which is out of tune. Even Londoners may see this exemplified in Hyde Park. Some beds consist principally of Geraniums with pale variegated foliage and sickly pink flowers, mixed with lilac Verbena. In others, a little precious blue is completely neutralised by being placed between rows of the yellow-foliaged Feverfew. We do not wish to disparage the splendid effects to be produced by large masses of brilliant flowers, nor could we afford to dispense with the many valuable additions which have been made of late years to our lists, both of annuals and half-hardy plants. Still less do we deny that at considerable expense we may have beds brilliant both in spring and autumn. But we do desire to put in a plea for our grandmothers' flowers, and to remind people of small income that it is impossible to have a satisfactory Italian garden without considerable space, while, by the proper use of perennials, and at but little expense and trouble, we may have our "Plesance" a glow of colour and full of aromatic odours from the time the Snowdrop and yellow Aconite brave the cold until the June Roses leave nothing to be desired, and again until the frosts are so keen as to stop vegetation. In how few gardens do we now see the Dog's-tooth Violet! American Cowslips, too, are rare, and little care is taken to cultivate the *Daphne Cneorum*, although its lovers think no garden complete without it. Hepaticas share the general neglect, yet who can see a clump of single white or single blue without pleasure? The double pink Hepatica is so gay when we have little else, that it is always in great request for the children's plots.

Any one who visits a well-planted garden during the month of May must be struck with the brilliancy of its flowers. Yet there may be nothing rare or uncommon to be seen. There are borders of Polyanthus; some yellow-fringed Auriculas and Lilac Primulas stand in favoured corners, beside the large blue Gentiabella; white Pinks already begin to peep from their sheaths, gay trumpet-shaped Mimulus, double Wallflowers and large dark single ones look well against a background of apple blossom; the early blue and white Campanula and a plant of *Dielytra* contrast with each other, while the bright scarlet and purple single Anemones share the foreground with double Daisies and blue grape Hyacinths. In July the same garden is equally beautiful. It contains double sweet-scented Rockets, Snapdragon of every variety of hue, Phloxes in all their pale delicate shades, Catchfly, Monkshood, white-plumed Lilies, Sunflowers amorous of light, Lupins, Sweet William, blue Iris, Pentstemons, Poppies with splendid scarlet flowers and blue-black centres. Tall plants of blue Salvia and Borage, and some lower-growing Veronicas supply the dark blue so much wanted in Italian gardens. We might add many plants worthy of a place which they now seldom obtain, such as

Hollyhocks, Crysanthemums, or standard Fuchsias, all of which are indispensable near any old-fashioned house.

As regards Roses, we venture to pronounce standards a mistake. They are very beautiful in their place—that is, in Italian gardens. They are, however, no substitutes for Roses pegged down in beds, so as to cover the earth and produce a mass of fragrant showy bloom. How seldom is the old Cabbage Rose now to be found, or a real abundance of the white Moss. Roses on their own stems, too, last so much longer than when budded, that they are in every way to be preferred. Then, in shrubberies, nothing looks better than common rustic poles, covered with climbing Roses, such as the old Bengal, Seven Sisters, double Ayrshire, Amadis, Boursault, and the more modern Gloire de Dijon. All these are extremely hardy, and some of them will grow to almost any height. People with small gardens, and anxious to save the expense of labour, would find hardy shrubs a good investment. Planted in clumps or borders, with a small space of ground in front in which to put common low-growing flowers, bulbs which have been used in pots, and some of the Narcissus and Daffodil tribe, they produce an excellent effect. It is scarcely necessary to say that, for the success of perennials, there must be no digging up of borders in a ruthless manner.—*Globe*.

SOCIETIES, EXHIBITIONS, &c.

THE MANCHESTER INTERNATIONAL EXHIBITION.

THIS took place this week in the Gardens of the Manchester Botanical and Horticultural Society, at Old Trafford. About £1,400 was offered in prizes, a sum which induced some important contributions not only from the Continent, but also from America. Altogether the entries numbered about 2,400. The Queen, besides a donation of £25, contributed some of the choicest productions of the Royal Gardens. The show was opened at noon by the Earl of Derby, who was accompanied by the Bishop of Manchester, the Mayors of Manchester and Salford, and many ladies and gentlemen. Lord Derby said that they had come there to use their eyes rather than their ears, and if they were to use their ears at all it would be in the way of listening to good music or agreeable conversation, rather than in hearing speeches of which they all heard enough or more than enough at other times and places. In declaring the show open he must compliment the Directors of the Manchester Botanical Society upon the energy and perseverance and public spirit with which year after year, from 1867 to the present time, they had supported exhibitions of a similar character. He was told that in the course of six years they had expended no less than £5,000 in prizes, and by so doing they had given a great stimulus and encouragement to horticultural art in all its branches. He was glad that public spirit had had its reward, and that they had not only done much to encourage horticulture, but that they had materially improved the financial position of their own society. He was glad to hear, and also, from what he had seen, to believe, that this exhibition would be far superior to any that had been held in former years.

The show itself was on a scale of magnificence far excelling that of ordinary exhibitions of the society, a gratifying circumstance, which in some measure repaid the Council and their able curator, Mr. Findlay, for their exertions in its behalf. The conservatory was devoted almost exclusively to fruit, with such foliage and flowering plants as served the purposes of decoration. The display of Grapes was, perhaps, unrivalled, and, indeed, was the main feature of the exhibition, of which we shall now proceed to give a detailed report.

Collections of Fruit.—For a collection of twenty kinds of fruits, limited to six sorts of Grapes, two of Pines, and two of Melons, and for which a first prize of £30 was awarded, Mr. Johnson (gardener to the Earl of Strathmore) was first with an extremely fine group, in which were six sorts of Grapes—viz., Lady Downes, Muscat of Alexandria, Black Alicante, Black Hamburgh, Bowood Muscat, and Sweetwater; a Queen and a smooth-leaved Cayenne Pine; Sulhamstead, Grosse Mignonne, and red Magdalen Peaches; Duc du Telliers, Pitmaston Orange, and Elurge Nectarines; Victoria and Magnum Bonum Plums, Morello Cherries, Bailey's Eclipse and another Melon, and Brown Turkey Figs. Mr. T. Jones, Royal Gardens, Frogmore, was second with a wonderfully fine collection of somewhat similar fruits. In the class of a collection of fifteen kinds of fruit, and for which the prizes were respectively £20, £15, and £10, Mr. J. Simpson (gardener to Lord Wharcliffe), Wortley Hall, Sheffield, was first with some good Enville and smooth-leaved Cayenne Pines; Muscat of Alexandria, Lady Downes, Black Hamburgh, and Calabrian Raisin Grapes; Little Heath and Colston Basset Melons, Morello Cherries, Noblesse Peaches, Elurge Nectarines, Moor Park Apricots, Brown Turkey Figs, Jargonelle Pears, Tower of Glamis Apples. Mr. W. B. Upjohn (gardener to the Earl of Ellesmere), Worsley Hall, was second with a fine collection. In the class of ten kinds of fruits, exclusive of Pines, Mr. G. Miles (gardener to Lord Carrington), Wycombe Abbey, was first with white and black Grapes, two dishes of Plums, and one respectively of Peaches, Nectarines, Figs, Melons, Cherries, and Pears. Mr. J. Bain (gardener to Sir C. R. Broughton), Ludlow, was second with fine fruits, especially some excellent Grapes, remarkable for finish and size, a bunch of Muscat of Alexandria in this group weighing

4 lbs., one of Buckland Sweetwater 4½ lbs., and one of Black Hamburgh 6½ lbs. Mr. Bannerman (gardener to Lord Bagot) was third. There was a collection of twelve sorts of hardy fruits, but amongst them we noticed nothing requiring special remark.

Grapes.—As regards size of bunches and berries, fine ripening, and finish, we have never before seen Grapes shown equal to those exhibited on this occasion. Mr. Hunter and Mr. Johnson showed magnificent bunches; and two pot Vines, exhibited by Messrs. Lane and Sons, of Berkhamsted, eclipsed in weight of crop anything we have previously seen. In the class of ten varieties of Grapes, one bunch of each, Mr. Hunter (gardener to the Earl of Durham) was first with bunches, which, as a whole, exceeded in bulk and quality anything hitherto shown. The varieties were Muscat of Alexandria, Golden Champion, Tynningham Muscat, Lambton Castle Seedling, Calabrian Raisin, Black Hamburgh, Black Alicante, Gros Guillaume, with immense shoulders; Mrs. Pince's Black Muscat, and Barbarossa. Mr. Johnson was second with large and first-class clusters, consisting of well-ripened and beautifully coloured berries; they consisted, in addition to those already mentioned, of Bowood Muscat, White Nice, Burchard's Prince, Mill Hill Hamburgh, Lady Downes's, and Buckland Sweetwater. Mr. W. Hill (gardener to Rev. W. Sneyd, Keel Hall), was third with very good medium-sized bunches. In the class of five varieties of Grapes Mr. Hunter was again first with wonderful clusters of fruit, more resembling several bunches tied together than one cluster, they consisted of Black Hamburgh (an immense bunch), Barbarossa, Black Alicante (one of the finest bloomed bunches in the exhibition), Tynningham Muscat, Calabrian Raisin. Mr. A. Bruce (gardener to J. Feildes, Esq., Chorlton) was second, and Mr. J. Roberts (gardener to the Earl of Charville) was third; both exhibitors having excellent Grapes. For three bunches of Black Hamburgh, Mr. W. Coleman was first with magnificent bunches; Mr. W. Temple was second, and Mr. A. Bruce third for fruit better ripened and coloured and having larger berries, but vastly inferior in weight to Mr. Coleman's fruit just alluded to. There were some twenty dishes of grapes competing in this class, so that many first-class fruits had to remain unnoticed. For three bunches of Muscat of Alexandria Mr. Hunter was first; Mr. Roberts, second; and Mr. Meads, Farnborough, third. In the class of three bunches of any white Grapes, exclusive of Muscat of Alexandria, Mr. Hunter was first with good specimens of Golden Champion; Mr. Hill second with Foster's white seedling; and Mr. J. H. Goodacre (gardener to the Earl of Harrington), Elvaston, was third. In the class of three bunches of any black Grape excluding the Black Hamburgh, Mr. Coleman was first with Lady Downes, grown in a heavy soil, charged with lime, Mr. A. Bruce was second with Gros Guillaume, and Mr. Meredith, of Liverpool, third, with Madresfield Court. In the class of the best collection of Grapes, whose names are not included in the other classes, Mr. Hunter was first with good fruit of Barbarossa, Black Prince, Black Alicante, Madresfield Court, Mrs. Pince, West's St. Peter's, Burchard's Black Prince, Lady Downes, Foster's White Seedling, Calabrian Raisin, Golden Hamburgh, Trebbiano, and Lambton Castle White Seedling. In the class of a pair of bunches of new Grapes, three years in commerce, Madresfield Court was the only successful variety; it was shown in perfection by Mr. Meredith, of Liverpool, who received a first prize for it; Mr. Hunter and Mr. Cox were the other competitors. The heaviest black Grapes was a bunch of Black Hamburgh from Mr. Hunter, which weighed 13 lbs. 2 ozs., and was deservedly placed first. Mr. Coleman was second with the same sort weighing 4 lbs. 4 ozs., and Mr. Bruce was third with the same sort. In the class of the heaviest bunch of white Grapes, Mr. J. Dickson, Langholme, exhibited a cluster of White Syrian weighing 16 lbs. 6 ozs., which was first, the second prize-winner being Mr. Roberts, with Muscat of Alexandria some 5 lbs. in weight. The prize for the best seedling Grape not in commerce was awarded to Mr. W. Thomson for Duke of Buccleuch, which is certainly an excellent variety with exceptionally large berries. In the class for two Vines in fruit in pots, Messrs. Lane & Sons were first with a Black Hamburgh, bearing thirty-two bunches, and a Foster's Seedling bearing thirty-four bunches; Mr. W. Upjohn was second.

Pines.—Such Pines as were shown were good, but neither quantity nor quality was in excess of what one might have expected. In the class of a pair of Queen's, Mr. C. Sandford, Kirkby Lonsdale, was first with fruits weighing 5 lbs. each; Mr. G. Smith, Longford Hall, was second. Mr. T. Jones, Frogmore, took the first prize for a smooth-leaved Cayenne Pine, and Mr. J. Miles received a first prize for two Enville Pines weighing respectively 9 lbs. 9 ozs. and 9 lbs. 14 ozs.; and Mr. J. Read (gardener to — Warburton, Esq.), Northwick, was second with a pair of good Jamaicas. There was also a new Pine growing in a pot and swelling its fruit, exhibited under the name of Lambton Castle, but the plants were too small to judge of their merits. Pines uncult in their fruiting pots were exhibited, but among them there was nothing remarkable.

Peaches and Nectarines.—These were, on the whole, good, but not quite so highly coloured as they commonly are, and by far the finest fruit amongst them came from beyond the Tweed. In the class of a dozen Peaches, two varieties of each, Mr. John Malcolm (gardener to Lord Cholmondeley), Nantwich, was first with Belle Beause, Noblesse, and Royal George; Mrs. W. G. Siddall (Cheltenham) was second, with Barrington, Grosse Mignonne, and Noblesse; and Mr. J. Barnes (Gloucester), third. For six Peaches of any sort, Mr. J. Park (Railway Cottage) was first, with a magnificent dish of Noblesse; Mr. W. Kind (Roby Hall), second, with Grosse Mignonne, highly coloured; and Mr. A. Beesley third, with a dish of very fine Grosse Mignonne. In the class of four dishes of Peaches, Mr. Johnson (Glamis Castle) was first, with

very fine fruits of Noblesse, Grosse Mignonne, Sulhampstead, and Red Magdalen. Mr. J. Lowden showed two dishes of Noblesse and two of the Royal George, all very fine; and Mr. J. Barnes was third, with Grosse Mignonne, Bellegarde, Royal George, and Noblesse. Standard Peach and Nectarine trees, in a prolific fruit-bearing condition, were exhibited by Mr. J. G. Law and others. For a dozen Nectarines, consisting of three sorts, Mr. Alfred Grant (gardener to J. B. Clegg, Esq.), Chilford, was first with fine highly-coloured samples of Elruge, Pitmaston Orange, and Balgowan; Mr. Cox was second, and Mr. Isaac Brundrett third. In the class of six Nectarines of any sort, Mr. Hind was again first with Violet Hâtive; Mr. Malcolm was second with Pine Apple Nectarine, and Mr. J. Taylor, Huyton, third with Pitmaston Orange. In the class of four dishes of Nectarines, Mr. Johnson was first with Duc du Telliers, Murrey, Pitmaston Orange, and Elruge, the other groups being mostly of the same sorts.

Apricots.—The Moor Park was the only variety exhibited; and, although the prize dish of it well maintained its reputation, other samples shown of it were inferior in quality compared with what they should have been. Amongst Apricots the competition was limited. For twelve fruits Mr. Hill was first, Mr. E. Rooker second, and Mr. J. Larking third; and for a dish of six Mr. Malcolm was first, Mr. Jennings second, and Mr. Larking third.

Melons.—Of these there was a large display, some of them being most uninviting in appearance, resembling, as they did, Vegetable Marrows or Pumpkins rather than Melons. Nevertheless, some were good both in quality and appearance, and among these none equalled in quality a specimen of Queen Emma, which was shown in perfection by Mr. D. T. Fish, Hardwicke House, Bury St. Edmunds. This was deservedly awarded the first prize as a green-fleshed sort; and Lord Napier, from Mr. Miller, of Worksop, was second. As a scarlet-fleshed kind, Munro's Little Heath stood first, and carried off three prizes in its class.

Figs.—The supply of these was somewhat limited, and in several cases they had evidently suffered from travelling. The Brown Turkey was almost the only variety exhibited, and with it Mr. Coleman was first, Mr. Currie, second, and Mr. G. Cooling, Bath, third.

Plums.—There was a keen competition in the two classes for Plums, and the several dishes exhibited were altogether of the highest merit. From Mr. Jones, the Royal Gardens, Frogmore, came the best dish of twenty fruits, consisting of Magnum Bonum, Green Gage, Washington, Goliath, and Denyer's Victoria; Mr. Webb, Reading, was second; and Mr. Cox, third. In the class of twelve Plums Mr. J. Morris, Braintree, was first with Rivers's Early Favourite; Denyer's Victoria being second.

Pears.—Of these there was a goodly quantity, but it is a little too early to see Pears as they should be exhibited. In the class of the collection of twelve sorts, Mr. G. Miles was first with Beurré Diel, Louise Bonne of Jersey, Gansel's Bergamot, Duchesse d'Angoulême, Pitmaston Duchesse, Glou Morcean, Marie Louise, Catillac, Brown Beurré, Knight's Monarch, and Williams's Bon Chrétien, Mr. J. McGuffoy, Castle Douglas, was second, and Mr. E. Cooling third. For six Jargonelles fit for table, Mr. C. Rylance was first with good and fair-sized fruits, as were those of which the second and third prize lots consisted. There were about twenty entries in this class. In the class of six Pears, consisting of two kinds fit for use Mr. J. Park was first with Duchesse d'Angoulême, and Williams's Bon Chrétien; Mr. Webb was second with Jargonelle and Williams's Bon Chrétien.

Apples.—Amongst kitchen Apples there was a keen competition, but in the classes for dessert Apples less interest was manifested. For six kinds of baking Apples, ripe or unripe, Mr. Webb was first, with Astrachan, Emperor Alexander, Fill Basket, Lord Derby, Reineette du Canada, and Lord Suffield. Mr. Jones furnished Frogmore Prolific, Waltham Abbey Seedling, Keswick Codlin, Blenheim Pippin, and Ecklinville. Mr. G. Miles was third. For a dish of six baking Apples, Mr. E. Cooling was first, with Lord Suffield; Mr. Park second, with Alexander; and Mr. Renshaw third, with Lord Suffield. No fewer than thirty-four groups were exhibited in this class. In that of six sorts of ripe or unripe dessert Apples, Mr. Jones, Royal Gardens, Frogmore, was first, with the only really good dish on the table; they were Old Nonpareil, Madeleine, Holly Grove, American Nonesuch, Red Astrachan, and Irish Peach. Mr. Webb was first, with Red Astrachan, as a dish of dessert Apples fit for the table; they were twice as large as any of the Astrachans in any of the other dishes.

Gooseberries.—Considering the lateness of the season, the Red Warringtons were good, plump, and fresh. Mr. J. Holder, Prestbury, Cheltenham, was first; W. Wallace, Esq., York, second; and Mr. S. Holder, Battledown, third.

Currants.—Of Red and White Currants the fruit was fine, large, and fresh. For a dish of Red Currants Mr. T. Miles was first, Mr. G. Bethel second, and Mr. J. Holder third. For the White Currants Mr. G. H. Goodacre, Elvaston, was first; Mr. N. Jones second, and Mr. George Tilyard third.

Tomatoes.—These were of superior quality; but those exhibited in the miscellaneous collections of vegetables were quite as good as those staged for competition in classes specially assigned for them. For four different kinds, Mr. Hunter was first with the large red-fruited Mammoth, Orangefield, and Early Prolific. Mr. R. Gilbert, Burghley, was second; and Mrs. Siddall third.

Classes open to Fruiterers only.—For the largest and most meritorious miscellaneous collection of fruits, prizes were offered of the respective value of £25, £15, and £5. Mr. Mason, Bolton, succeeded in winning the first prize and well did his collection deserve such a distinc-

tion, for it was the admiration of all who saw it. It consisted of thirteen Pines, three Melons, six dishes of Grapes, one of Tomatoes, six of Apples, seven of Pears, six of Peaches, two of Nectarines, one of Apricots, three of Currants, four of Nuts, one of Figs, three of Cherries, one of Capsicums, ten of Plums, one of Gooseberries, one of Lemons, and one of Oranges. Mr. W. Copeland, Manchester, was second; and Mr. W. Barnes, Gloucester, third. In the class of a collection of fifteen kinds of fruits Mr. Robert Jennings was first; Mr. F. Stevenson, Altrincham, second; and Mrs. W. Siddall third. For a collection of twelve sorts of Pears, Mr. G. Cooling, Bath, was first with Beurré Hardy, Duchesse d'Angoulême, Beurré d'Esperen, B. Clairgeau, B. d'Amanlis, B. Diel, Brown Beurré, Uvedale's St. Germain, Louise Bonne of Jersey, Belle de Brussels, Williams's Bon Chrétien, and Marie Louise. Mrs. E. Turner was second, and Mr. W. Barnes third. For a collection of twelve kinds of Apples, Mr. Cooling, of Bath, was first; Mr. C. Rylance second, and Mrs. E. Turner third. For twelve kinds of hardy fruits, Mrs. C. Turner was first with two dishes of Apples, three of Plums, two of Pears, Cherries, Nectarines, Peaches, and Nuts. Mr. F. Stevenson was second, and Mr. G. Cooling third.

Further details of this great exhibition will be given in our next.

The Earl of Derby presided in the evening at a banquet held in the Hulme Town Hall to celebrate the opening of the show. After the usual preliminary toasts had been disposed of, his lordship proposed "Prosperity to the Manchester Botanical and Horticultural Society." I dare say, he said, there may be many people to whom the idea of a horticultural exhibition in the very heart of the Manchester district may seem like talking of growing Grapes in Norway or of setting up a cotton-mill in a West Indian sugar island. (Laughter.) And, of course, we must allow that the presence within a few miles of us of something like a million of population, nearly all of whom are engaged in trade or manufacturing pursuits, with the accompaniment of more machinery, and probably more smoke, than is to be found in the same compass anywhere else in these islands is not a circumstance which would promise well for the success of botanical or horticultural display. But there are not many things impossible to human energy. That is a doctrine which is pretty thoroughly impressed upon us in Lancashire, and just in proportion as the display and as the preservation of rare and beautiful specimens of horticultural skill is rendered difficult for us by the local circumstances of our position, just in the same proportion those who live in this neighbourhood are the more prepared to enjoy sights which contrast in such a striking and marked manner with those habitually before their eyes. (Applause.) I once heard a friend say that there was one advantage in living in a great town, and that was that he could thoroughly appreciate the country (laughter), which, he contended, the rural residents never could, because, being used to it, they took the beauty and enjoyment around them as simply a matter of course. I do not go so far as that, but think we may see in this case the operation of that universal law of nature which tends, so far as it goes, to level the conditions of human life. The law, I mean, by which all advantages, all sources of enjoyment, are keenly appreciated just in the degree in which they are obtained with difficulty. You don't expect me to argue or explain the general advantages which arise from such exhibitions as that we witnessed this morning. There are some things which are too plain for argument, and which illustration can only make less clear. I suppose we may take it for granted that the English people in these days are coming more and more to be inhabitants of great towns. This is, I suppose, a necessary condition of our present industrial existence. If, therefore, for the majority of us, living in a town has become inevitable, what we have to do is to try to meet, by artificial means, the requirements of a more artificial existence. (Applause.) If we are shut out from the wilder scenes of nature, or, at least, if we are compelled to go longer and longer distances in order to find them, we may in some degree compensate ourselves by assembling in places like the Botanical Gardens—natural creations more choice, more beautiful, and more varied than Nature unaided will ever show you. We can make our selections out of all countries and out of all climates, and we can show to the natives of India and the natives of tropical America in what they might probably consider—I do not consider it so—a dark, damp, smoky suburb of a Lancashire town a greater number of their own most exquisite products than any of them would have seen in their own country during the whole course of their lives. (Applause.) To do this as we are able to do it is not looking at the matter as a mere *tour de force*. It is not a mere display of man's power over nature. It is really, although it may be comparatively small, a contribution to the cause of general refinement and civilisation. A man need not be a fanatical worshipper of art in any one of its forms to believe, as I do believe, that no one can have a thorough appreciation of natural and artistic beauty without being the better for its existence in his mind. (Applause.) I take it that of all forms in which that feeling exhibits itself there is none which comes so home to the average Englishman as that of the garden. We are by habit, tradition, and temperament an out-door people. We like museums and picture galleries very well; but if we are to tell the truth we like our gardens, our forests or commons, our parks, and our moors a great deal better. (Applause.) Even in crowded lodgings and in dirty streets you will see evidence of that feeling. Where nothing better can be kept you will see a few flower-pots outside the window, and the same instinct which puts those unfortunate flowers in that situation produces exhibitions such as that we have seen to-day. (Applause.) I think, and I hope, that the time is not very far off, when every large town, and almost every small town also, will have its public garden, and will consider that having a public garden is simply a recognised institution and almost a necessity. (Applause.) Foreigners—as, for instance, the French and Germans—are before us in that respect now, but I have often noticed that it is a way we

have to be a little behind-hand in several improvements, then to wake up all of a sudden, come up with a rush, and make up for lost time in a very few years. (Laughter and applause.) I will not dwell upon the subject, because I am really talking about that which you know better than I do. I will not dwell upon the mere utilitarian idea that it is a desirable object to obtain a cheap supply of both vegetables and fruit. I am told, by those more able to speak authoritatively than I am, that both might be much more abundant than they are if horticulture was more generally studied than it is; and obviously an art which aims at extracting the most out of a limited quantity of land by the application of labour and scientific skill is an art peculiarly suited to our condition, labour and scientific skill being abundant and land limited.

After some further remarks, Lord Derby concluded, and the toast was drunk with much cheering.

After tracing the history of the society from 1828 to the present time, Lord Derby said: The first large exhibition which was held produced a profit of something like £500; and in the last six years the result of following that policy has been that the society's debt, which at its maximum stood at £9,000 had been reduced to £6,500.

Dr. Watts (Chairman of the Council) responded.

The Chairman said, before proceeding to other business, he wished to intimate that six gentlemen had offered 100 guineas each if the debt of £6,500 was paid off; and, in humble imitation of them, he offered himself as the seventh. (Applause.) He then proposed the toast of "The Exhibitors," and said an exhibitor at a horticultural show, if he failed, only lost a prize: a public speaker, if he failed, made an exhibition of himself. (Laughter and applause.) They had been told that one of the uses of these exhibitions was to teach people who thought a great deal of their own performances in the horticultural way that they were not quite as great performers as they supposed; and he could very well imagine a man who had been priding himself upon his flowers or fruit, and who had spent a great deal upon them, walking round the tents that day and coming to the very rational conclusion that he himself was about the greenest article to be found in his own conservatory. (Laughter.) They were greatly indebted to the gentlemen who, even from great distances and at an amount of expense and trouble which in a merely pecuniary point of view a prize would not make up for, had sent their products to the present exhibition. (Hear, hear, and applause.)

The toast was responded to by Mr. W. Thompson (Galashiels) and Mr. W. Bull (Chelsea). The health of the judges, proposed by the Chairman, was responded to by the Rev. S. R. Hole and Mr. Shirley Hibberd. The proceedings then terminated.

ROYAL HORTICULTURAL SOCIETY.

SEPTEMBER 3RD.

LOVERS of Dahlias and Asters must have felt disappointed with this exhibition; for, although in some of the classes excellent blooms were shown, yet, upon the whole, there was but a poor display. One of the most interesting features of the show was half a dozen pots of *Lilium speciosum*, exhibited by Mr. T. Baines (gardener to H. S. Micholls, Esq.), Southgate. These were well grown, and profusely covered with fine blooms. The varieties were *L. l. rubrum*, *L. l. album*, and the delicate rose-spotted *L. l. punctatum*.

Dahlias.—In the class of twenty-four cut flowers distinct, Mr. C. Turner, Royal Nurseries, Slough, was first with finely-formed flowers of Rev. J. B. Camm, bright red, tipped with yellow; Monarch, deep crimson-purple, nearly black; Arbitrator, fine peach or salmon; Mr. Dix, fiery crimson; Mrs. Saunders, lemon-yellow, tipped with white; Crimson King, deep crimson, fine globular bloom; Annie Neville, one of the finest and purest of whites; Egyptian Prince, a finely-formed flower; Princess, creamy-white; Alexander Cramond, deep velvety crimson; H. G. Quilter, light red, tipped with yellow; Duke of Edinburgh, fine clear yellow; Flag of Truce, white, suffused and streaked with lilac; Toison d'Or, fine golden-yellow; Charlotte Darling, white, tipped with crimson-lake, very bright; Incomparable (John Standish) crimson; Victory, deep crimson-purple; Lady Gladys Herbert, white and rich carmine; Julia Wyatt, creamy white; Wm. Keynes, fiery red; John Neville Keynes, golden-yellow, tipped with red; Ovid, bright crimson-purple; Prince Arthur, clear golden-yellow. Mr. Sale, the Vale Nurseries, Sevenoaks, was second with twenty-four fine flowers. Mr. J. Aldous, Gloucester Road, Kensington, also exhibited twenty-four miscellaneous flowers in this class. In the class of twelve distinct flowers (amateurs), Mr. J. Burpitt (gardener to R. P. Taylor, Esq.), Bruton, was first with good blooms, among which were Lady G. Herbert, John Kirby, Donald Beaton, Prince Arthur, Peri, Mr. Dix, W. Keynes, and others. Mr. Peach (gardener to C. R. C. Petley, Esq.), Riverhead, near Sevenoaks, was second, who showed Lady of the Lake, Vanguard (deep crimson-velvet), James Cocker, and Lord Palmerston, in excellent condition. Mr. J. Gaines, Hampton Wick, was third with twelve moderate flowers, including John Standish and John Neville.

Asters.—In the class of twelve cut flowers (not quilled) Mr. G. Rowe, The Rookery, Roehampton, was first with fine well-coloured incurved flowers; second, Mr. J. George, Putney Heath, who had good blooms, but not quite so fresh as the preceding; third, Mr. E. Smith (gardener to T. D. Galpin, Esq.), Bristol House, Putney Heath. In the amateurs' class Mr. R. Anderson, 21, Blythe Street, Bethnal-Green Road, E., who gained the first prize, staged twelve fine well coloured flowers, very clean and of satiny lustre; second, Mr. E. Rowe, who had fine fresh flowers; third, Mr. J. George, Putney Heath, who had twelve

good recurved flowers. In classes 7 and 8, Mr. R. Anderson and Mr. J. Gaines were first in the order named. In class 9, Messrs. Barr & Sugden's prize for a tray of twenty-four Pompons or small-flowered Asters—not less than eight varieties—Mr. J. Gaines was first with fresh little flowers. In this class Mr. R. Anderson was deservedly awarded an extra prize for a tray of twenty-four fine Anemone-centred flowers, which was one of the best features in the show. These varieties remind one of *Pyrethrums*, and differ from their allies in having the florets of the disc developed, instead of those of the ray as in the ordinary kinds.

Asters in Pots.—Class 6 for six Asters, not quilled, in 8-inch pots, First, Mr. E. Smith (T. D. Galpin, Esq.); second, Mr. E. Rowe, Roehampton; third, Mr. J. George, Putney Heath. None of these were of special merit, the plants being in most cases drawn and leggy.

Orchids.—The principal exhibitors of these were Messrs. Veitch, who had a fine plant of *Vanda Bensonii* with ten spikes of flowers in excellent condition, one spike bearing eighteen fully developed flowers. A pan of the new *Cypripedium Sedeni* bore eight fine spikes. A splendid plant of *Saccolabium Blumei majus* was staged in fine condition by Mr. Burt (gardener to H. B. Mildmay, Esq.), Shoreham-place, Sevenoaks. This plant bore six fine spikes of well-developed and richly-coloured flowers, and obtained a cultural certificate. Mr. J. Douglas exhibited a fine cut flower-spike of the true *Aërides suavisimum* noble.

Miscellaneous.—A new seedling *Gladiolus*, Fanny Tillery, was exhibited by Mr. Tillery, of Welbeck. It has a fine spike of well-formed flowers of good substance, colour—crimson-lake, shaded with lilac, each segment having a pure white stripe down its centre. It is a seedling of the present year and looks promising. Cut spikes of a yellow-flowered Foxglove (*Digitalis lœvigata*) were shown by Rev. M. J. Berkeley, together with fine cut spikes of the scarlet-flowered *Phygelis capensis*.

Fruit.—Of this there was a poor display, the principal exhibitors being Mr. Early, who showed a collection of Plums, and Mr. James Harris (gardener to Mrs. Vivian), Singleton, Swansea, who exhibited a well-grown Queen Pine, 6½ lbs. in weight, grown in a 12-inch pot. It was said to have been cut from a plant sixteen months old. A seedling Peach came from Mr. Powell, Cedar Cottage, Windsor, but it was not found to be better than existing kinds. One or two seedling Melons were shown, but, owing in some degree to the dull weather, they were not so well flavoured as usual.

Vegetables.—A fine collection of Italian Tripoli Onions, of large size, exhibited by Griscuolo, Kay, and Co., 57, Gracechurch Street, received some attention, some of them measuring 6 or 7 inches in diameter. A dish of very fine Bryanstone Kidney Potatoes came from Mr. R. T. Veitch, of Exeter, and specimens of a very nice Cucumber came from Messrs. Munro and Wilkinson, Potter's Bar, Herts., named Duke of Edinburgh. Its chief peculiarity is its extremely short neck, and if it is a prolific bearer it will, doubtless, be invaluable for market purposes.

First-class Certificates.—These were awarded to the following:—

Dahlia Ovid (Turner), a deep crimson, shaded with purple-lilac, a bold and constant flower; nearly perfect in shape.

Dahlia Julia Davis, clear yellow self.

Dahlia Mrs. Ellis, a finely-formed white flower, tipped with bright lilac.

Messrs. Veitch exhibited the following:—*Begonia Vesuvius*: This is, as its name implies, a fiery scarlet-flowered variety, and has a stout vigorous habit.—*Begonia Acme*: This has deeper-coloured flowers than the last, but similar in habit, and equally effective. Both lifted from the open ground.—*Begonia Stella*: This has large pale green leaves and deep crimson-scarlet flowers, and promises to be an effective pot plant.—*Vanda Bensoni*.

We would once more remind exhibitors that they should see that their names are affixed to their stands, as, owing to omissions of this kind which are becoming the rule, rather than the exception, at these meetings much inconvenience is experienced.

COVENT GARDEN MARKET.

SEPTEMBER 5TH.

Flowers.—*Heliotropes*, *Mignonette*, *Aloysia citriodora*, and other sweet-scented plants in small pots meet with a ready sale. Asters are now coming in in good condition. They are carefully lifted from the open ground, and potted into small pots a few days before they are sold. *Fuchsias*, *Lilies* of various kinds, *Amaryllis Belladonna*, the brilliant scarlet *Scarborough Lily* (*Vallota*), little Ferns, *Lycopods*, and small Conifers still continue to make up the supply. White Asters figure largely in some of the bouquets, along with Tea Roses, *Bouvardias*, *Rhynchospermum* Orchids, Maiden-hair Ferns, and Grasses. Small Myrtles and Conifers, *Eucalyptus*, and other evergreens, find a ready sale. Large consignments of wreaths, crosses, and bouquets of everlasting or immortelles have been received from the continent.

Prices of Fruits.—Apples, per half-sieve, 9d. to 1s.; Cherries, per lb., 9d. to 1s. 6d.; Chilies, per 100, 2s.; Figs, per doz., 1s. to 3s.; Grapes, hothouse, black, per lb., 1s. to 6s.; Muscats, 2s. to 6s.; Lemons, per 100, 10s. to 13s.; Melons, each, 2s. to 4s.; Nectarines, per doz., 3s. to 8s.; Oranges, per 100, 12s. to 24s.; Peaches, per doz., 6s. to 12s.; Pears, per doz., 1s. to 4s.; Pine Apples, per lb., 3s. to 6s.; Tomatoes, per doz., 1s. to 2s.; Walnuts, per bushel, 12s. to 20s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 1s. 6d. to 3s.; Beans, Kidney, per half sieve, 1s. 6d. to 2s.; Beet, Red, per doz., 1s. to 2s.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 3s.; Cucumbers, each, 3d. to 6d.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horse-radish, per bundle, 3s. to 4s.; Lettuce, per bunch, 3d.; Lettuce, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 4s. to 6s.; button, per quart, 6d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 9d. to 1s.; Potatoes, per bushel, 3s. 6d. to 5s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Scorzonera, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, 4d. to 8d.; Vegetable Marrows, per doz., 1s. to 2s.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

LONDON GARDENS.

VISITORS to London who take an interest in the style of gardening carried on in, or immediately around, our great metropolis, may find in the following some useful hints. There are but few phases of horticulture unrepresented in our London gardens, and the numerous improvements that have been recently carried out in our parks and promenades, set them in the front rank as places of public recreation.

THE PARKS.

These claim our first consideration, and, in speaking of them, we cannot even direct attention to all their important features. Hyde Park occupies the foremost position among public parks; in it one may stroll over broad breadths of cool turf, or sit beneath the shade of giant Elms near the ornamental water, and easily imagine one's self miles in the country. The bedding arrangements in Hyde Park, though sufficiently floral also, manifest a taste for sub-tropical plants, which have for years formed the chief feature of Battersea Park. Among groups of trees in this park, may be seen some fine old Elms, and, near the fountains in Kensington Gardens, a grand clump of different kinds of Ashes. In Kensington Gardens, too, are one or two interesting borders well-filled with hardy herbaceous plants. In Battersea Park sub-tropical gardening is carried out with energy and spirit. Here one may see Tree Ferns, Palms, Musas, Cycads, Cannas, Caladiums, and other forms of semi-tropical vegetation luxuriating out of doors with a vigour that is truly surprising in our northern clime. The success which has attended the culture of these comparatively tender plants at Battersea depends on their being planted in sheltered nooks where rough winds do them no harm. Carpet bedding is well carried out here with succulents and other compact-growing plants. St. James's and the Green Park both possess nice breadths of greensward, and the former was at one time celebrated for its collection of hardy shrubs and trees, which were all correctly named by Don, but somehow neither names nor collection has been kept up. It contains a pretty piece of ornamental water, which, with its island, waterfowl, and Buckingham Palace in the middle distance, has a fine effect. Victoria Park—the people's park as it is called, and the name is not undeserved, for it is the favourite resort of the working classes of the east-end of London—is noted for its effective bedding arrangements, while at the same time it contains a fine collection of hardy trees and shrubs. It also contains a fine piece of ornamental water, prettily overhung with Weeping Willows, or other trees and shrubs of an appropriate character, with which its islands and banks are somewhat thickly planted. With Regent's Park, containing as it does, both zoological and and botanic gardens, most visitors are familiar. Its "floral walk" is well worth seeing, as are also the floral decorations in the Zoological Gardens. The Botanic Garden, so exquisitely laid out by Mr. Marnock, is, however, its chief feature, and no gardener should leave London without seeing it.

PUBLIC GARDENS.

Among these, the Royal Botanic Garden at Kew stands pre-eminent, both as regards size and general interest. It is specially noted for its fine collections of hardy trees and shrubs and herbaceous plants, and, taken as a whole, is perhaps the finest botanic garden in the world. Fine specimens of the common and Turkey Oaks, Cedar of Lebanon, Deodar, Judas Tree, Araucaria, Magnolia, Sophora, Maiden-hair tree, Elms, Limes, and Planes will be found both in the botanic garden, properly so-called, and in the pleasure grounds. The collection of Succulents is one of the most extensive in existence. Ferns are well represented, both from tropical and temperate regions; the Orchids are worth notice, as the collection includes many old or rare kinds now seldom seen elsewhere; and the collection of Palms includes some of the finest specimens in cultivation. One house is devoted to the culture of the Royal Water Lily (*Victoria Regia*) and other tropical aquatics,

including *Euryale ferox*, *Nymphæas*, *Papyrus antiquorum*, and the Sacred Bean or *Nelumbium*. One of the most useful and interesting houses in the gardens, not even excepting the Palm house itself, is the great temperate house in the pleasure grounds. Here most of the specimens are planted out in parallel beds, and grow with amazing health and vigour. Specimens so treated of *Araucaria excelsa*, *A. Bidwilli*, *Cyathea medullaris*, *Dicksonia antarctica*, *Todea africana*, and the Blue Gum-tree of Australia (*Eucalyptus*) are amongst the finest to be found in European gardens. The Royal Horticultural Society's Garden at Chiswick, though now much reduced in size, is still worth a visit on account of the interesting experiments conducted there for the purpose of testing the excellence or otherwise of new fruits, flowers, and vegetables. Most of the decorative plants used in the conservatory at South Kensington are grown here. The gardens at South Kensington belonging to the society are just now worth notice, as are also those at the Crystal Palace, Sydenham. The chief attraction here is the flower gardening, which, as a rule, is well carried out. There are also some fine trees and shrubs; and magnificent views of the surrounding landscape may be obtained from the palace and terraces. The same remarks apply to the grounds at the ill-fated Alexandra Palace, Muswell Hill.

PRIVATE GARDENS.

Under this head we can only allude to such gardens as are most easy of access to strangers. Among these Syon, near Isleworth, is well worth seeing; it is an extensive place, celebrated for its fine trees. Here, too, the Cocoa-nut first produced its fruit in this country, and at one time Syon was famous for its tropical fruits, the growth of which is, however, now given up. Gunnersbury Park is another fine place noted for its fine fruit, more especially Pine-apples and Grapes. It was here that Mr. Mills grew his celebrated Providence Pine, which weighed 15½ lbs., and, as a Pine and Grape-growing establishment, Gunnersbury still fully maintains its former celebrity; here may be seen one of the best new Vineries in the country. Strawberries are forced by the thousand pots, and French Beans and Cucumbers are extensively grown all the year round. The Peach wall here is covered with a glass case, under which heavy crops are annually produced. The conservatory contains a magnificent pair of Tree Ferns (*Dicksonia antarctica*) 23 feet high, the largest, perhaps, ever imported. Lovers of Orchids should visit Mr. Day's establishment at Tottenham, and Mr. Rucker's at Wandsworth, both places celebrated for fine collections of these deservedly favourite plants. Mr. Wilkins, of Leyton, and Mr. Bockett, The Firs, Muswell Hill, have also very fine collections of Orchids and exhibition plants. Mr. Micholls' collection of stove plants at Southgate is the most remarkable, as regards size, perhaps in the country, and must on no account be overlooked. The Pitcher-plants which it contains are marvels of skilful cultivation. The noble collection of trees at the Bishop of London's Palace, Fulham must also be seen, both on account of their size, age, and variety; and the Roses and Conifers in Mr. Bohn's garden at Twickenham are also well worth inspection.

MARKET GARDENS.

The best cultivated market-gardens round London are those known as the "Fulham Fields," the once famous Deptford grounds being now over-run by the builder. From Chelsea to Kew Bridge on the north bank of the Thames, and including Fulham, Hammersmith, Turnham Green, and Chiswick—indeed, almost all the land between the river and the road extending from Hammersmith to Kew—is occupied by garden crops. On the other side of the same road, the garden lands extend from Hammersmith to Acton, and from thence between Gunnersbury and Brentford, through a large district of Isleworth, to Richmond, Twickenham, and Hounslow. In Stratford, Lea Bridge, and other north-eastern districts, are the Essex Onion fields. On the south side of the Thames, extending from Deptford to Woolwich, are many market-gardens. From Battersea to Putney are several scattered patches, but from Putney and through Barnes to Mortlake are large areas of market-garden ground. The whole tract of land between Mortlake, Richmond, Kew Gardens, and the Thames is entirely under market-garden crops.

NOTES OF THE WEEK.

— MR. GEORGE MAW, of Benthall Hall, has recently added to his fine collection *Saxifraga Rudolphiana*. This is a very small member of the *S. oppositifolia* group, much smaller than *S. retusa*, and, as it need hardly be added, a precious addition to our collections of Alpine plants.

— A PLANT of the variegated American Aloe (*Agave Americana variegata*) is now in flower in the temperate house at Kew. It is not a large specimen, and consequently the flower-stem is not robust nor of great height, which, including the tub, is about 14 feet. It bears on its top the usual candelabrum-like mass of greenish-yellow flowers.

— CONSIGNMENTS of French Chasselas or Fontainebleau Grapes are now arriving in Covent Garden Market, where they realise 1s. per lb. They are greatly superior to the watery Spanish Grapes which are just now imported in such large quantities.

— THAT superb new hardy flowering shrub, *Xanthoceras sorbifolia*, hitherto found to be so difficult to increase, has at last been successfully propagated by Messrs. Thibaut and Keteleer, of Sceaux, near Paris. It will be "sent out" by that firm in 1875.

— A VIGOROUS plant of the common American Aloe (*Agave americana*) is now in flower in the open air at Penzance. It has withstood the winter for several years past in that part of Cornwall, and now bears a strong spike, 25 feet in height, and furnished with thirty-seven branches.

— THE autumnal Croci are now beginning to flower in our public gardens, and remind us that these beautiful hardy floral gems are not grown so generally as they ought to be for purposes of outdoor decoration. They are most effective when planted in undisturbed positions, such as on the lawn or in the wild garden, as their flowers, being borne without foliage, look somewhat naked in open borders.

— EPIGYNIUM LEUCOBOTRYS is now showing its remarkably pretty fruit in Mr. Gumbleton's garden at Belgrove, Queenstown. It does not always produce the fruit at the ends of the branches under the leaves as figured in the "Illustrated Bouquet." In the specimen in question two racemes of fruit come out of the hard bare stem; the fruit resembles polished ivory balls nearly as large as a snow berry, with a brilliant black dot in the apex of each berry, surrounded by fine smaller dots. The roots are tuberous like a Yam.

— As the fruits of California are now sold in our own markets, the state of the crops there is not without interest. In April a heavy frost injured the Grapes so much in the vicinity of Sacramento, that the crop will be light, and in other sections it will not reach an average. The Strawberry crop was not up to the full average; but prices were high, and the receipts were decidedly satisfactory. The first Peaches, Hale's Early, brought eighteen cents a pound; but soon with large shipments, prices sank to four and six cents. The supply is full, but not in excess of the demand. Apples are plentiful and cheap. Plums are not plentiful, nor do shipments pay well, especially when made to a distance. Pears are in great abundance, and are shipped to the States in large quantities. The quality is good, but the great drawback is the high price of freights.

— THE final arrangements for the Bradford meeting of the British Association are as follows:—The first general meeting will be held on Wednesday, Sept. 17, at 8 p.m. precisely, when Dr. Carpenter will resign the chair, and the President-Elect, Prof. W. A. Williamson, F.R.S., will assume the presidency, and deliver an address. On Friday evening, Sept. 19, at 8.30 p.m., a discourse by Prof. W. C. Williamson, F.R.S., of Manchester, on coal and coal plants; on Saturday evening, Sept. 20, a lecture on fuel to working men only, by Mr. Siemens, F.R.S.; on Monday evening, Sept. 22, at 8.30 p.m., a discourse on molecules, by Prof. Clerk Maxwell, F.R.S.; on Tuesday evening, Sept. 23, at 8 p.m., a soiree; on Wednesday, Sept. 24, the concluding general meeting will be held at 2.30 p.m., and in the evening a grand concert will be given in St. George's Hall, at 8 p.m. The excursions on Thursday, Sept. 25, will be to Harrogate, Ripon, Studley, Bolton Abbey, Gordale Scar, Malham, Clapham Caves, Settle Caves, and Ingleboro'.

— WE have received from Mr. Thompson, of Ipswich, specimens of two novelties, in the way of Composite plants, one, a very pretty new *Gaillardia* (*G. amblyodon*, Gray), a species found distributed pretty generally throughout Texas, and doubtless other neighbouring states. It resembles some of the varieties of *G. picta*, but differs from all of them in the rich crimson colour possessed by the ray florets, in the peculiar scales of the involucre, and in having longer foot-stalks to the flowers. In general habit it is larger and more bushy than *G. picta*. The other is a large-flowered and richly-coloured form of *Centaurea americana*, named *Hallii* in compliment to its discoverer. Its flowers measure from 3 to 4 inches across, and are of a rich Tyrian purple tint. The pale-coloured scales of the involucre are fringed with comb-like teeth, and when seen at a little

distance remind one of heads of common Mignonette. It is a native of Texas. Both plants are profuse flowerers, and their fine appearance, when in blossom, will recommend them to all lovers of herbaceous plants. The *Gaillardia* is figured in Dr. Gray's "*Chloris Boreali-Americana*."

— THE beautiful Sumach, *Rhus glabra laciniata*, is now finely in flower, and, if anything could add to its prettily diversified foliage, it is the pleasing dark orange-crimson flower spikes, which it is now bearing in Messrs. Osborn's Nursery, at Fulham.

— ONE of the most striking plants now in flower in the great conservatory at Chatsworth is *Musa coccinea*. It is planted out in a border in the form of a clump, and, being of a dwarfish character, its brilliant red flowers are seen to advantage, and contrast vividly with the bright green foliage by which they are surrounded.

— ONE of the finest displays of Fuchsias we have ever seen is now in the gardens of Chiswick House. They are planted out in the open border, and trained, like Vines, up the rafters. As they richly fall from these through the length of the conservatory range (about 100 yards) one may fancy one's self in a Fuchsia grove.

— IN the collection of Orchids belonging to M. Dutreux, at Celles St. Cloud, near Paris, a very remarkable variety of *Cœlogyne cristata* has recently been raised. The leaves of this plant are streaked with veins of the purest white, like those of *Phalaris arundinacea picta*. M. Dutreux intends to multiply this singular variety as speedily as possible, and when sufficiently plentiful for distribution, it will no doubt be much sought after.

— WE have received from Mr. Grieve, of Culford, some beautifully ripened Nectarines, the produce of trees spur-pruned on the Cordon system. Owing to the crop being heavy they were not particularly large; but they were highly coloured and finely flavoured. It is, therefore, evident that, even in the case of Peaches and Nectarines, excellent fruit can be produced by this system.

— THE vestry of St. George's, Hanover Square, have consented to a liberal offer of Mr. Barlow, a vestryman, to plant trees in Piccadilly, on the footway running from Hyde Park Corner up to Arlington Street. The trees selected are Planes, similar to those on the Victoria Embankment. The example thus set in Piccadilly might, as we have often stated, be very usefully followed in other parts of London.

— WE understand (says the *Builder*) that the plans for the reconstruction of Alexandra Palace having been drawn up and agreed upon, the ruins have now been handed over to the builders, and the rebuilding of the palace will be commenced as soon as the *débris* can be cleared away. It is said that, with the exception of the walls of the centre transept, the building will be entirely reconstructed. The new palace is to be larger than the old building, being both longer and broader. It is to have three transepts, one forming a concert hall, another a theatre, and the third, it is stated, will be devoted to bazaar purposes. These will be connected by corridors, in which light goods will be exhibited for sale. In some respects the new building will resemble the Crystal Palace, it having been decided that iron and glass shall be largely used in the construction of the building. It is expected to be completed and ready for opening in June next.

— THE vintage in France is being carried on actively in the south, and is favoured with just the temperature desired. In Languedoc the west has been better treated than the east, as it is on the latter side that the phylloxera, hail, and frost have exercised the greatest ravages. Certain cantons (among others Perols, Villeneuve, and Montpellier) complain of the pyrale, a sort of butterfly, the nymph of which is so hurtful to the Vine, and which already, between 1828 and 1837, caused, in the Meconnais and the Beaujolais, damage estimated at thirty-four millions, or three millions a year. Means have not yet been found to destroy that insect in its various forms of egg, caterpillar, chrysalis, and butterfly. As the regretted M. Bonjean said in a report to the Senate against the destruction of small birds, a hundred tom-tits would do more than the combined efforts of thousands of Vine-growers. The Gard has suffered particularly from phylloxera, and about a third of the crop has been eaten up by that terrible scourge. The yield will only be one-half of that of an ordinary year. In the Narbonne, where the Vines are a little late, there is every reason to believe that the crop will be good. The rain has done much good to the Grapes, which had been somewhat burned up. The vintage has not yet commenced in the Bordelais. The fruit is ripening there under good conditions; in the Medoc, however, the change in the colour is proceeding slowly. The Vines in the arrondissement of La Réole are said to have been attacked with oidium, excepting those treated with sulphur. The vineyards in the centre, those of the Loir-et-Cher among others, have a most promising appearance, but, as in Burgundy and Champagne, the gathering will scarcely commence before the month of October, and then only can an estimate be formed of the yield.—*Galignani*.

THE INDOOR GARDEN.

SEDEN'S LADY'S-SLIPPER.

(*CYPRIPEDIUM SEDENI*.)

At a late meeting of the Royal Horticultural Society, Messrs. Veitch and Son exhibited a nice pan of this interesting plant, bearing eight strong spikes of rosy-purple flowers. It had been previously exhibited, and obtained a first-class certificate, although not so profusely flowered as on this occasion. Besides its value as a decorative plant, it is also interesting as being a hybrid. It is the result of a cross between *C. Schlimii*, a rare and beautiful species from Ocaña, and *C. Reichenbachii longifolium*, a robust-growing species from Costa Rica. In habit it is nearly intermediate, its dark shining foliage resembling that of *C. longifolium*, while the margins of the leaves are partially revolute and undulated, as in *C. Schlimii*. The noble foliage alone is amply sufficient to recommend this fine hybrid to the notice of Orchid growers; while its rosy flowers, which are produced in great profusion, are distinct from those of any other Lady's-Slippers, both in colour and form. The spikes, which are of a purple or chocolate colour, vary from 12 to 18 inches in height, and are thickly beset with hairs. Several flowers are borne on each spike, though, as far as I have seen, the plant resembles *C. longifolium* in only developing one flower at a time on the same spike. The largest flowers measure about 3 inches across, each being subtended by a large, almost foliaceous bright green bract. The sepals are nearly white, slightly suffused, and veined with rose or rosy-purple, and have undulated margins. The petals are longer than the sepals, and are white, with deep rosy margins, the depth of tint varying in different plants. In form they are nearly intermediate between the short roundish segments of *C. Schlimii* and the longer and tapering petals of *C. longifolium*, and are once twisted or partially tortile at their apices. The pouch or slipper-shaped lip comes nearest in shape to that of the last-named species; but, instead of being green, suffused with bright or lucid brown, it is of a bright rosy-purple tint, and much more effective from an ornamental or decorative point of view. Most *Cypripedes*, though singular in shape, are deficient in bright colouring, and in this respect *C. Sedeni* must be looked upon as a step in the right direction. It is strikingly orna-

mental, and will grow well in a moderately warm temperature. The accompanying sketch will convey some idea of the habit and general contour of the flowers. *Apropos* of Lady's-Slippers, we may here allude to a remarkably fine plant of *C. Schlimii*, in the collection of E. Wrigley, Esq., of Bury. This specimen has several leading growths, and leaves fully 16 inches long, and nearly 2 inches in width, of the freshest green imaginable. This species, which is seldom seen in vigorous health, will be found to grow best in a cool and humid temperature. A shady corner of the house should be selected for it, where it will not be checked by cold draughts, and, like its congeners, it requires an abundant supply of moisture at the root when growing, and a fresh open compost, thoroughly well drained. B.



Seden's Lady's-Slipper (*Cypripedium Sedeni*).

Hibiscus roseo-sinensis.—One of the prettiest indoor plants we have lately seen is a specimen of *Hibiscus roseo-sinensis*, in the gardens at Whalley House, Manchester. It is planted against a glass partition in a Pinery, trained as a wall plant, and its roots are in good loamy soil, to which, however, they do not confine themselves, but wander widely into the tan-bed, in which the Pines are plunged. By keeping a goodly quantity of young wood on this plant and watering it abundantly, a long succession of the most brilliant scarlet flowers is the result. This is the single red form, and is much more pleasing than the double sort. The latter is grown in another house in the same range.—F.

Conservatory Rhododendrons.—Two lovely *Rhododendrons* may be added to your list (see p. 176.) requiring glass protection or moderate heat, one is the true *Java-nicum*, the other *Brookii*—I say true in the case of the *Java Rhododendron*, for there is a very inferior variety in circulation under the same name. Can anybody say why

a most beautiful hybrid, between some hardy *Rhododendron* and *Azalea pontica*, called *Smith's Aureum*, has so entirely disappeared? I once had a couple of plants, which unfortunately died before flowering, but I saw a plant in magnificent bloom at Lord Normanby's Villa at Florence, the flowers in large trusses, and as deep a yellow as the parent *Azalea*, but with the habit of a *Rhododendron*. It is quite worth a little trouble to cultivate, and the protection of glass if necessary.—AN OLD SOLDIER.

Sarracenias.—In a cool and airy conservatory in the Botanic Gardens, Manchester, are two specimens of *Sarracenia purpurea* some 2½ feet in diameter, and in a most flourishing condition. They are, however, not individual plants, but consist of several grouped together, each being in a separate pot plunged in a large pan among *Sphagnum*. Both *Sarracenias* and *Sphagnum* are alike flourishing, and lead to the belief that one is looking only at one plant, instead of several. Arranged thus, *Sarracenias* appear to greater advantage than when grown separately in small pots.

A RAMBLE IN ARRAN.

By JAMES M'NAB, Royal Botanic Gardens, Edinburgh.

Most tourists to Scotland must have visited Arran, a hilly island off the west coast, about 20 miles long and 10 miles broad, exhibiting a rich and picturesque variety of mountain scenery, rarely to be met with in such a limited space. Out of a four days' sojourn on this island, two were warm and pleasant, while the others were dull and rainy, a state of weather not uncommon in Arran, but well suited for the district, as it is in a great measure composed of wild heathy moors and natural pasturage. The plants observed in the villa gardens give evidence of a climate superior to that experienced in many parts of the mainland, particularly where distant from the sea. *Fuchsia discolor* (which may well be called the burning bush) is now abundant everywhere, both as standards and on cottage walls, gorgeously arrayed with crimson blossoms. It grows freely from cuttings, so that no difficulty need be experienced in conveying it from cottage to cottage, no matter how remote. Besides the *Fuchsia*, we frequently observed the *Leycesteria formosa*, a shrubby plant from Nepaul, covered with drooping clusters of reddish-purple berries; also *Veronica speciosa* and *V. Andersonii*, and occasionally *Hydrangeas*, *Weigelas*, and *Deutzias*, but the latter are, far from prevalent, although they can be as easily propagated as the *Fuchsia* itself. These are generally mixed with numerous varieties of common evergreen shrubs. Flowering suffruticose plants are scarce, a circumstance owing perhaps to the deer coming down at night among the villa gardens, and clearing off everything eatable within their reach. If so, this may in some measure account for the inactivity which seems to prevail among the native inhabitants, in introducing novelties from neighbouring gardens.

With the exception of the Silver Fir, lovers of arboriculture will not find much to interest them. This tree, however, of itself is a perfect picture; generally growing in deep rich soil, chiefly composed of peat and loam. The specimens of Silver Fir, although not so large as are to be seen in some of the grounds connected with the mainland, are nevertheless very fine, particularly in the reserve grounds connected with Brodick Castle. The generality of these specimens are about 50 or 60 feet high, and, where growing in situations sheltered by Beech, Ash, Oak, Spruce, or Scotch Fir, their drooping branches are as symmetrical as those of any *Araucaria* in the country; but when the trees attain a large size, the symmetrical habit entirely leaves them. In this condition they are seen over-topping all the trees of the forest, and exposure to the wind soon causes their tops to become scraggy. The largest specimens were about 110 feet high, and from 15 to 16 feet in circumference at the base. Two Silver Firs in the Brodick Castle grounds, not far from each other, must evidently have had their tops injured, as the stems at the height of 12 feet became forked, as represented in the annexed sketch. Two of the uppermost branches left after the accident on opposite sides, had long ago been striving for the leadership, which both had equally attained. These two trees, now 60 feet high, are as perfect and symmetrical as any on the grounds, and the irregularity here noticed cannot be seen without looking steadily up their stems. Several forests of Larch are to be seen in various parts of the island, but chiefly confined to large rounded hills. They seem all in the healthiest condition, evidently enjoying the soil and situation where they have been planted; as well as the Scotch Fir, of which many admirable and characteristic specimens abound.

In the pleasure-grounds of Brodick Castle many very interesting shrubby plants are to be seen, proving that the climate of Arran is admirably adapted for almost all kinds of evergreens, such as Portugal Laurel, Bay Laurel, *Laurustinus*, *Alaternus*, also Holly, Yew, and Red Cedar, which were growing vigorously; in many cases the Portugal Laurels are fully 40 feet high, and leafy to the ground. Of the other evergreen shrubs I may mention *Alaternus*, 10 feet high and 18 feet in circumference of branches; *Gaultheria Shallon*, covered with flowers and fruit, single shrubs 5 feet high, of a regular semi-globose shape, and 27 feet in circumference; *Erica vagans multiflora*, standing in regular massy clumps, the largest being 6 feet high, and 30 feet in circumference. The *Fuchsias*

and *Hydrangeas* are also magnificent, the former 12 feet high, and 40 feet in circumference, and the latter 6 feet high, and 27 feet in circumference. The *Hydrangeas* were partially in flower, but not to the extent I expected them to be. Of the various species of *Arbutus*, the *A. Unedo* was the only one I remarked, and, to my surprise, always in poor condition. With the exception of one plant of *Rhododendron altaclarens*, or perhaps one of the allied hybrid varieties, between *R. arboreum* and *R. Catawbiense*, no other hybrid *Rhododendron* was observed, while the ordinary Gibraltar species (*R. ponticum*) and its numerous varieties, abundant all over the grounds, were literally covered with fruit, proving the rich display they must have made during the flowering season. The soil in which they are growing is naturally of a peaty character, and the sides of the hill walks bordering them were in many places regularly carpeted with seedlings averaging from 1 to 10 inches in height. Since the *Rhododendron* has been found to succeed so well in the natural soil of Arran, the proprietor ought to encourage the cultivation of the white, scarlet, and dark hybrids. They would be found to succeed quite as well as the common purple kinds, and many nurserymen, I feel convinced, would be delighted to give plants of the scarlet hybrids in exchange for



Singular Fir Tree in the Island of Arran.

seedlings of *R. ponticum*, as they are admirably adapted for stocks, on which to graft the scarlet and other varieties.

In few districts of Scotland are the soil and climate better suited for exotic shrubs and plants, such as *Yuccas*, *Tritomas*, *Cordylines*, and a host of others, than those of Arran. None, however, were seen in the open air; the only examples observed being under glass. It may be that the deer attack all newly introduced plants when first put out; but if this is the case, how does it happen that those already existing have got up as they have done without sustaining injury? Many other species, if tried, might succeed equally well, and ultimately add ornament and interest to the island. In the way of recently-introduced Conifers, very little has been done, the chief specimens seen, and that very sparingly, being the *Araucaria imbricata*, *Cedrus Deodara*, *Abies Morinda*, *Pinus excelsa*, *Wellingtonia gigantea*, *Pinus Lambertiana*, and *P. austriaca*. The only *Araucaria* worthy of notice is 20 feet high and 28 feet in circumference of branches, but the proportions are considerably inferior to some of those seen in one of the gardens at Lamash. All the British Conifers mentioned look as if they required a trench opened up round them to be filled with good soil mixed with old rotted-manure, in order to stimulate them to more luxuriant growth, which the climate is quite capable of doing if the necessary food were supplied to their roots. Some portions of the park-lawn present a peculiar appearance,

owing to the method by which some of the tree-stems are protected to prevent the deer from injuring their bark. They have a strong wire fence put round each, 4 feet high and about 3 feet from the stem, planted thickly round with Whins, which appear to be kept in proper order. These Whins or Furze do not seem to be much injured by the over-hanging branches of the trees which they are planted to protect. One very interesting feature of Arran is the extreme luxuriance of the native Heather, but the finest growth we observed



Tree Guard made of Wire and Furze, or Whins.

occupied two or three miles of the country extending along both sides of the road between Brodick and Lamash. The common Ling (*Calluna vulgaris*) grows in large round clumps, from 12 to 18 inches in height, and in an endless variety of tints. The landscape effects produced by this beautifully-coloured foreground, broken only by long undulated groups of bushy Scotch Firs, also Alder and Beech, particularly along the course of the streams, backed by the lofty and, at that time, unclouded summit of Goat Fell, supported by the rugged tops of its smaller associates, was a sight not often to be seen in that state of perfection in which myself and my



Ivy found on damp Moss in Arran.

pleasant travelling companions had the good fortune to witness on the 22nd ult.

It was truly amusing to see the energy of lady visitors in the collecting of Ferns; the excessive moisture of the climate being very conducive to the growth of most cryptogamic plants. The variety of them, however, is not so numerous as some are led to suppose. Seedlings of all sizes are particularly plentiful, but hundreds carried off for rare species will only turn out to be seedlings of the male Shield Fern, Toothed Shield Fern, and the female Spleenwort. Besides these, numerous specimens are got of the Hard Fern, Oak Fern, Beech Fern, Male Spleenwort, Hart's-tongue, Wallrue, and the Hay Fern. The common Bracken is excessively vigorous all over

the island, generally averaging about 6 feet in height. Other very interesting Ferns are occasionally got, but these are few and far between. Rustic baskets of Ferns are made up and sold as containing about thirty varieties each, but on a close inspection ten varieties of all sizes were as many as I could make out in any of them. When leaving the island we saw many ladies carrying Ferns they had collected, along with bundles of sticks and small Larch branches covered with cones, to enable them to make up fancy baskets for themselves on their return home.

While going through the Brodick Woods, I was delighted to notice on the stems of many of the Oak trees a most beautiful small-leaved Ivy (of which I enclose a branch.) The leaves are an inch long, three quarters of an inch broad, deeply sinuated and closely imbricating each other. As this Ivy grows on the damp Moss surrounding the stems, it will be found admirably adapted for the ornamentation of rustic Fern baskets. It will root freely in the Moss of which they are chiefly composed, and the points ought to hang gracefully down all round, so that when the wood of the basket begins to fail, the Ivy roots ought to keep the mass together.

THE FLOWER GARDEN.

THE CULTURE OF IXIAS AND SPARAXIS.

THE following successful mode of growing these charming plants, both under glass and in the open air, is given by M. E. André in the *Illustration Horticole*:—"About the 10th of October, having previously prepared a compost consisting of one-third fine river-sand, one-third heath-soil, and one-third spent hot-bed material, I potted my plants in well-drained pots about 5 inches in diameter, putting five or six bulbs in each pot. The pots were then placed under the shelves of the house until the bulbs began to push, when they were removed to a temperate house and placed on the front ledge of one of the beds. About the beginning of November, the leaves of the *Ixias* and *Sparaxis* were from 6 to 10 inches long, according to the vigour of the varieties, and they continued to grow gently, receiving during the winter only as much water as was absolutely necessary to prevent the soil from becoming too dry. Towards the middle of February, flower-buds began to appear on the rush-like stems which rose from the middle of the leaves, and it became necessary to support these stems, which in some cases were over 3 feet high, with slender stakes to prevent them from falling and breaking off. With these simple precautions I enjoyed, for more than a month, the sight of some splendid flowers, of which the fresh blooms of the *Ixias*, *Sparaxis*, and *Babianas* were particularly charming. There was a succession of most pleasing varieties, but none more beautiful than *Ixia crateroides* and *Ixia pallida*, which I recommend to all amateurs. The *Watsonias*, which have long stout leaves like those of *Gladiolus*, and the *Tritonias*, both of which were treated in the same way, did not bloom until April. After flowering, I left the bulbs to dry slowly in the pots in which they had flowered, and placed them all under the shelves along with the *Achimenes* which had gone out of flower. The following October, when taking them out of the pots in order to replant them, I found all the bulbs in good condition. The culture of these plants in the open air is not more difficult; nevertheless, it may not suit all soils and climates. The method which I have employed here in Touraine, and which is now rewarding me with a profusion of bloom, is as follows:—About the beginning of October I prepare a bed of ordinary garden soil by mixing it with a quantity of river or white pit-sand, in order to render it as light and porous as possible. In this I bury the bulbs about 3 inches deep, and at a distance of 6 inches from one to another. The *Watsonias*, growing somewhat more vigorously, require to be planted at greater intervals. The leaves begin to appear overground before the 1st of November; and, if the soil is suitable, they show it by a short and dark-green growth. In December they must be protected from frost—not that the *Ixias*, &c., feel it much, unless the ground is deeply frozen; but because the sudden changes of frost and thaw, rain and dryness, which occur in our climate, are very different from the conditions which these plants experience in winter in their native habitats at the Cape. The best mode of sheltering them is to place a frame or frames over the bed, and cover them with the lights merely. It is quite unnecessary to have any linings of manure or leaves. Water the plants only so far as to prevent dryness of the soil. I proceed thus until the middle of March. A fortnight before that time, I take care to shade the glass of the frames by painting it with a solution of Spanish white in water, to which I add a little milk. This I find the simplest and best kind of shading. About the

15th of March I take off the lights, and, if the weather is mild, the flower-buds soon appear, and are quickly followed by the full bloom. Stakes are seldom necessary, as the plants do not grow so tall in the open air as they do under glass; sometimes, however, they are found useful. Of *Sparaxis* the finest kinds are *S. Pavonia*, *S. pulcherrima*, *S. tricolor*, and *S. grandiflora*, and of these there are numerous and charming varieties. By this simple mode of culture, I secure a wonderfully profuse show of bloom. As soon as the stems begin to dry, I cease watering, and in June and July I take up the bulbs and lay them by for re-planting in the following October. These beautiful flowers only open well in the full sunshine. If they are cut for bouquets, care should be taken that the vases in which they are placed shall be set in that part of the room where they will receive the greatest amount of light."

The following descriptive list of the principal varieties of these plants may be useful to some of our readers:—

Ixias.

Achievement.—Flowers, white, tinged with rose.
Aimable.—Lemon-yellow, with velvety rose-coloured centre.
Alice.—Delicate rose-colour.
Alliance.—Purple, streaked with white.
Aramis.—Pale yellow, with rose-coloured eye.
Aspasia.—White, shading into purple; a splendid flower, of fine form.
Anais.—Pale maroon, with magenta centre.
Aurantiaca major.—Yellow, with black centre.
Aurora.—Crimson, shaded with yellow.
Brutus.—Yellow, with a large red-dish centre.
Bucephalus.—Violet crimson.
Calypso.—White, streaked with blue, and a maroon centre.
Campana.—Pure white; dark red centre.
Cesar.—Yellow, streaked with purple; brilliant centre.
Cleopatra.—White, dotted with red; fine black centre.
Conquerant.—Red, shaded with yellow; fine.
Constance.—Rich yellow, mixed with red; dark centre; flowers large.
Clarus.—Lemon-yellow, streaked with purple; centre black; fine form.
Crateroides.—Crimson.
Cygnus.—Straw-colour; large purple centre.
Diana.—White; large purple centre.
Distinction.—Lilac; violet centre; flowers semi-double, late blooming.
Elfrida.—White; brilliant centre.
Esther.—Cream-coloured, shaded with crimson; fine.
Evelina.—White; brilliant rosy centre.
Faune.—Brilliant orange, shaded with rose.
Fulgens.—Scarlet.
Gem.—French white; purple centre.
Giant.—Light rose, changing to purple.
Gloria.—Crimson; large black centre.
Golden Drop.—Handsome yellow; black centre.
Grand Duke.—Straw coloured; red centre.
Hector.—Purple; flowers very large.
Heide.—Rose and lilac.
Isabella.—Lilac and white; very fine.

Josephine.—Brilliant rose, shaded with white.
Lady Slade.—Brilliant rose; very effective.
Luna.—Cream-coloured; dark maroon centre.
Longiflora hybrida.—Pure white; white centre.
Lucretius.—Purple, shaded with yellow and tinged with orange.
Madonna.—White; larger red centre.
Magnifica.—Rich yellow; dark centre.
Majestoso.—Straw-coloured; large and fine.
Marcus.—Cream-coloured, streaked with rose; black centre.
Mars.—Deep red, shaded with crimson; black centre.
Marcobius.—Brilliant yellow; black centre.
Modelle.—Straw-coloured.
Nelsoni.—Straw-coloured, streaked with purple.
Nora.—Fine white; brilliant rose centre.
Nosegay.—White, dotted with red; crimson centre.
Pallas.—Cream-coloured; large and fine; one of the best varieties.
Pharaoon.—Salmon-coloured; black centre.
Prastans.—Purplish crimson; fine.
Plutus.—Rich yellow; black centre.
Purpurea major.—Fine purple; large.
P. striata.—Ditto, streaked.
P. elegans.—Rosy purple.
Rosalie.—White; red centre.
Rosea.—Rose-coloured.
R. maculata.—Spotted with rose.
R. multiflora.—Brilliant rose.
R. plena.—Rose; flowers double.
Safrano.—Brilliant yellow, streaked with magenta.
Scilla.—Cream-coloured, streaked with rose; black centre.
Silas.—Cream-coloured; deep crimson centre.
Snowdrop.—White; blue centre; one of the finest.
Sunbeam.—Orange, streaked with crimson; very fine.
Titus.—Yellow; maroon centre.
The Bride.—White; blue centre.
Triomphe.—Rose-coloured; brilliant deep yellow centre.
Venus.—Sulphur yellow, streaked or dotted with rose; maroon centre.
Virgile.—Brilliant yellow; large black centre.
Vichflora.—Green; purple centre.
Viola.—White; brilliant crimson centre.
Vulcani.—Crimson, shaded with orange.

Sparaxis.

Bulbifera.	Maculata.	Purpurea striata.
Grandiflora.	Pavonia.	Thunbergii.
G. striata.	Pulcherrima.	Tricolor.

Babianas.

Attraction.—Blue; a strong-growing and branching variety.
Bicolor.—Petals alternately white and pale blue.

General Scott.—Rosy purple mixed with white.
Pallida.—Pale blue.
Rosea grandis.—Rosy purple.
Villosa.—Blue.

Tritonias.

Aurea.—Golden yellow.
Bella.
Crocata.—Saffron.
Delicata.—Pure white.
Eclair.—Brilliant scarlet.
Eleonore.—Very fine.
Ecimia.
L'Avenir.—Pale orange; erect habit.

Longiflora.—Rosy orange; very large flowers.
Longiflora.
Pallida.—Salmon-coloured.
Pauline.—Rose-coloured; crimson centre.
Rosalie.—Brilliant rose; semi-double.
Rosea longiflora.

Polemonium cæruleum variegatum as an Edging.—One of the most satisfactory edging or band plants we have here is this Polemonium, which, although perfectly hardy, is but rarely met with in cultivation. Notwithstanding that, its beautifully striped feathery leaves give our flower garden rather a unique appearance. It may be that plants to be favourites now-a-days must be easily procurable in quantities; and, unfortunately, this Polemonium is somewhat liable to damp off in winter, more particularly under glass. When kept in a frame during winter, the glass must be removed every favourable day, for, with the exception of having wet or intense frost, a close stagnant atmosphere is all that need be guarded against. I have seen plants lifted from the beds and placed upon the surface of the soil under a wall, surrounding the roots with spent tan, to be continued during the winter, as fresh as possible; while, on the other hand, provided the sub-soil and beds are perfectly free from stagnant moisture, they need not be lifted from the beds at all. Draw away about an inch of the soil from around them, and surface-dress with finely-sifted ashes, pressing them tightly around the neck or collar of the plants. When the latter push out in spring they may be divided and planted where they are to remain. In many cases, so much fostering care has, I am persuaded, been the cause of failure with this plant, concerning the culture of which, when more plentiful and less cared for, much of the apparent difficulties will vanish, and instead of its value being 18s. per dozen it will scarcely be worth as many pence.—GEO. WESTLAND, *The Gardens, Witley Court*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Celosia Huttonii.—Among dark-leaved bedding plants this is one of the best I have seen this year. It is compact in growth, excellent in habit, and could be used anywhere in beds or borders where symmetry is a consideration.—P. W.

Amarantus salicifolius.—Plants of this, set out of doors in Messrs. Veitch's nursery, are now beginning to assume a fine orange-scarlet hue, and to be very effective. It is a plant of easy culture, and deserves to be much more extensively grown than it is.

Phygelis capensis.—This is an effective plant trained in sheltered positions along a south wall. It is now flowering very profusely at Kew, where it is bearing spikes of scarlet tubular flowers, each panicle being considerably over a foot in length. It is also a valuable plant for the herbaceous border, blooming, as it does, when only about a foot high.—B.

Veronica Andersonii.—Plants of this are now flowering freely in every villa garden, in which some of them reach a height of about 2 feet 6 inches, and measure about the same in breadth. They are covered with scores of dark bluish-purple flower-spikes, which, if the autumn continues mild, will keep in beauty until near Christmas.—P. W.

Pentstemons.—In a collection of these now in bloom at Messrs. E. G. Henderson's nursery, Wellington Road, the following appeared to be the best, viz.: *Lafontaine*, a bright carmine-flowered sort with a white throat, *Gustave Aubert*, and *Bridesmaid*, the latter nearly a pure white. These are dwarf and compact growers, and altogether beautiful varieties either for borders or for masses.—P. WALLACE.

Worms on Lawns.—Can you kindly recommend me anything to kill worms on a lawn? My little lawn in the town is infested with them.—(C.R.I.C.K.E.R.) [Dissolve one ounce of corrosive sublimate in a little hot water, which mix with forty gallons of cold pump-water, and water the lawn in damp weather, if possible; or, water the lawn with lime-water, which drives the worms to the surface, when they may be crushed by a heavy roller.]

Dampier's Glory Pea (*Clianthus Dampieri*).—This, which is well-known to cultivators of greenhouse plants as one of the most difficult of all plants to grow and flower successfully, is now not only growing vigorously, but is also flowering profusely planted out and trained on the south wall of the Orchid houses at Kew. Its foliage is very fresh and silvery-looking, and a few days ago the plant bore four perfect clusters of its crimson and blackish-purple blossoms.—B.

Fruiting and Hardiness of *Musa Ensete*.—You have lately referred to the fruiting of this *Musa* in the open air at Palermo. In 1864 or 1865, a *Musa Ensete* planted out in the Parc Monceaux at Paris produced a magnificent bunch of fruit which ripened, but, unfortunately, did not produce fertile seeds. After that, the plant naturally died. It may also be added that a plant, planted by me some years before out of doors at La Muette, endured the winter merely protected with planks thatched with Moss.—E. A.

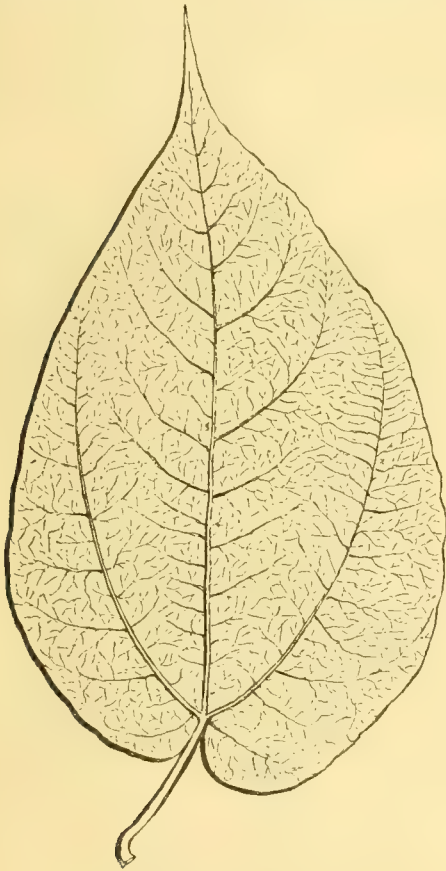
THE ARBORETUM.

HARDY TREES AND SHRUBS.

By GEORGE GORDON, A.L.S.

ACER SIKKIMENSE (THE SIKKIM MAPLE).

This forms a handsome middle-sized deciduous tree, with a spreading and very ramose head. It is a native of Bhootan and Sikkim, in Eastern Nepaul, where it is found at an elevation of from 6,000 to 9,000 feet; it was first introduced in 1857. The leaves are broadly ovate, tapering to a long acute point, three-ribbed, rounded and cordate at the base, slightly crenated or entire on the edges, smooth on both surfaces, of a deep glossy green above, and on rather short footstalks, and, just before they fall off in the autumn, turn to a deep yellow tinted with red. The flowers are small, greenish-yellow, and are produced in long, dense, terminal, nodding spikes in May.



Leaf of the Sikkim Maple.

The keys or fruit are small, glabrous, and in long, dense, terminal, pendulous, simple racemes; the carpels are rounded, and the wings straight on the back and slightly extended. The length of a full-sized leaf is 8 inches including the foot-stalk, which is about $1\frac{1}{2}$ inch long, and the breadth is $3\frac{1}{2}$ inches. Its synonyms are *Acer Griffithii* and *cordifolium*.

CURIOSITIES OF TREE-PLANTING.

A PROVERB of north-west India declares that three things make a man to be truly a man—to have a son born to him, to dig a well, and to plant a tree. It is impossible for the untravelled Englishman to realise the misery of a treeless country. Europe has no natural deficiency of trees; hence church-building took the place of the old Aryan tree-planting, as an act of piety to God, and of duty to the future, in the counsels of the early Christian teachers of the European nations. Both in East and West, trees were no doubt the first temples, and the planting of groves was the primitive form of church building. Abraham, we are told, planted a grove in Beer-

sheba, to commemorate his solemn covenant; but amongst his descendants it became in time the mark of a pious ruler to "cut down the groves," as the seats of pagan worship; the mark of a careless ruler to leave them untouched; and the mark of an impious ruler to plant and dedicate new groves. It is not hard to find reasons why the grove naturally became the first temple. Men were no doubt impressed by the hoary age of trees compared with the short life of man. A tree was often the centre around which each succeeding generation deposited its traditions—a visible bond uniting the departed with the living, and the living with the unborn. The cool grateful shade of trees was a natural type of the graciousness the worshippers sought for from the power they worshipped—especially in eastern lands, where shadow is so precious and so exceptional. The yearly new birth and death of their foliage was a national symbol of human life. The darkness and density of the grove, we must add, hid the obscenities and cruelties which belonged to the darker developments of heathen worship.

Mr. Ruskin has spoken to us moderns upon the obligation of planting trees as a part of our duty to the future. No doubt the family and the tribe, as well as religion, were present to the mind of the earliest planters of trees, for priest, king, and father were combined in the planter's person. Some of the conditions of primitive life are repeated, with a difference, in the new lands of the West; and we have a recollection of some very Ruskin-like remarks on tree-planting as a duty, which appeared three or four years ago in that most appropriate organ of a people believing in itself, the excellent *Overland Monthly* of San Francisco. California has trees, we all know: we have heard something of their gigantic girth. But the greatest part of those it has are everlastingly green; or, as the writer puts it, "exempt from that alternation of decay which brings around those yearly lessons so wholesome to every man, to remind him of that which shall be hereafter: there is not that most musical, most melancholy, rhythm of decay which ripens all that is divinest of the heart." He counsels every Californian to plant (as his own protest against the too brisk and business-like character of Californian life) "a deciduous tree, just for the leaves; and when they are falling," says he, "let him sit under it and dream a little." It is rather a long and roundabout method of delivering one's self, or society, from mammon-worship; but, as there is some natural deficiency of such trees in California, he gives the advice of a very ancient type of patriarch and patriot, when he says: "Let every Californian, like Laertes, plant his new-born son a row of trees; and every bevy of maidens, like the companions of Helen, devote to the bride a Sycamore." Any one who has seen the happy thousands of the poorest of Londoners dancing, playing, eating, and drinking under the shadow of the noble Elms in Greenwich Park, on Easter-Monday or Whitsun-Monday, must be brought to confess that Charles II. did at least make some good provision for the English nation. Evelyn tells us that he planted these trees (little dreaming, indeed, of their future use) in the third year after the Restoration.

When an Englishman who has been long absent from his fatherland again catches his first glimpse of its road-sides and fields through the windows of a railway carriage, perhaps nothing strikes him so forcibly as the picturesqueness and the sparseness of the trees. He has seen trees in level lands stretching for miles like a thin diaphanous wall in dull uniformity: now he sees them merely dotted here and there upon the landscape, but each tree is more or less of a picture in itself. Or he has seen in mountain lands every spot of available earth seized upon to supply life to a Cherry tree, a Walnut tree, a Pear tree: he has seen fruit trees everywhere lining the roads and fields, instead of hedges, and probably wondered if English lads could pass to and fro every day under luscious Cherries or Pears and leave them untasted; now he sees nothing but solitary trees, or scattered groups, which look as if they had planted themselves out of whim or playfulness just where they pleased, not one of which can bring any money to its proprietor except by its destruction. Give a German or Swiss *Bauer* the tenancy of an English farm, and he would at once begin to arrange himself an orchard out of the mere unused corners and slices of land he would almost certainly find in its fields and along its boundary-lines. I must leave it to the adepts to determine whether he would show himself a good or bad agriculturist by his activity.

Tree-planting has, in fact, retained in Germany longer than elsewhere something of its cult character, binding together religion, nation, and family. In the Vosgesen, the old German farmers were not allowed to marry until they had done something for the future good of the tribe by planting a stated number of Walnut trees. When the amiable and liberal Oberlin was pastor of Wildbach, in the Steintal, he set forward this old custom of tree-planting as a Christian duty.

The asking of a distinguished guest to plant a tree is a pleasant way of commemorating his visit. We do not know that it is much

used here. In 1852 the Oratorian poet, F. W. Faber, was visited at St. Mary's, Sydenham, by Prince Massimo and Cardinal Wiseman, each of whom left behind him the record of his visit in a tree of his own planting. According to the German fancy, no tree planted as a memorial will grow and flourish unless it has a motto given it at the time of its planting. When the late Baron Bunsen was visiting Lepsius at Berlin in 1857, the antiquary requested him to plant a young Oak in his beautiful garden. "I held the tree," writes Bunsen, "while the earth was thrown over its vigorous roots, and I said, in giving the name—

'Oak, I plant thee. Grow in beauty; straight and firm and vigorous stand!

Bunsen is the name I give thee: flourish in the German land.
For the house of Lepsius blooming, through the storms grow fair and free,
And a shelter in the noonday to his children's children be!'"

One of his sons planted at the same time a Weymouth Pine, to which they fastened the accommodating German motto, "Wonne-Muth" (joyful courage). Tree-planting is as necessary a part in many German rejoicings as it has been of French rejoicings during each Revolution epoch. The Trees of Liberty, however, were often planted to die—actually as well as metaphorically. I have seen trees of this kind, stripped of all but a crown of leaves, planted in German Switzerland to mark a local festival. The poor people of the village of Cleversulzbach gathered together, on the 10th of November, 1859, round the grave of Schiller's mother, and marked the birthday of her son by planting a Lime tree "in the soil that covers the heart that loved him best." When the parish priest of Starrkirch, in the German canton of Solothurn, was excommunicated, his parishioners planted a tree opposite his parsonage with the very determined motto, *Dem Pfarrer zum Schutz, Rom zum Trutz*.

In different parts of our own country we may come across trees—in Sherwood, indeed, across entire woods—planted to commemorate national events. But our English tree-plantings have long been mainly the work of individuals, and not of communities. A tree planted in Lord Rollo's garden at Duncrub, to commemorate the union of England and Scotland in 1707, a Fir, 80 feet high, and 18 feet in girth, was blown down in the gale of March, 1866. The greatest day of commemorative tree-planting ever known in England was probably the first anniversary of the Restoration, May 29th, 1661. The letters from different towns in the "Mercurius Publicus" and the "King's Intelligencer" of that year, contain accounts of such plantings. Many of these, however, were, like the Trees of Liberty, planted only to last as long as the festival. In one letter from Halesworth, in Suffolk, the "own correspondent" of the period writes: "The number of trees that were planted in the town was so great that it perfectly resembled an artificial forest. The whole town lay under so absolute a disguise that the inhabitants knew not their own houses."—"Mercurius Publicus," June 6th, No. 23. The wholesale commemorative planting in the Sherwood district marks victories gained by our famous admirals. Lord Newark planted twenty-five acres, partly forest trees and partly Fir, and called it Howe's Grove, in honour of Earl Howe's great victory. A plantation of 15 acres, adjoining Thoresby Park, is called after Earl St. Vincent; and twelve acres on the north boundary of Budby Forest, celebrate Lord Duncan. In other parts of the Sherwood district great plantations bear the names of Nelson, St. Vincent, Howe, and Spencer—the last in honour of the nobleman who then presided at the Admiralty, and to whose judicious arrangement of the fleet the English successes were in part attributed.

Individual trees planted by famous men are still to be seen by the pilgrims who visit their homes and haunts. In the last century there was quite a fashion for planting Willows. It is said that the first Weeping Willow seen in England was sent to the poet Pope, as a present from Turkey, by his friend Lady Mary Wortley Montagu, and planted by him in his garden at Twickenham. It is the famous *Salix babylonica* of the Psalter, upon which, on the banks of Euphrates, the weeping daughters of Jerusalem hung their harps. Garrick planted two Willows on his lawn beside his Shakespeare Temple; in the midst of a thunderstorm, which destroyed one of them, the pious and devoted widow of the great actor was seen running up and down excitedly, crying out: "Oh, my Garrick! Oh, my Garrick!" The Willow known as Dr. Johnson's Willow, at Lichfield, was blown down long ago; it was said in the *Gardeners' Magazine* to have been planted by him, but it is more probable that his admiration and talk of it developed the legend of his planting it. At the time of its destruction, it was 13 feet in girth. Pieces of household furniture and snuff-boxes were made of it; and slips from it were planted by his admirers throughout the neighbouring country; an off-set of the old tree was planted on the same site. Thomas Moore tells us, that when Byron first went to Newstead Abbey from Aberdeen, at the age of ten, he planted a young Oak

in some part of the grounds. He had a notion, or thought he had, that as it flourished, so should he. Six or seven years later, on revisiting the spot, he found his Oak choked up with weeds, and almost dead.

Dr. Johnson's case throws light upon many legendary tree-plantings at a greater distance from us in time. The Mulberry tree in the beautiful gardens of Christ College, Cambridge, owed its defensive bands of lead, and its props, to the legend that it was planted by Milton. There is an Oak in the gardens of the convent of St. Onophrio, at Rome, in which Tasso died, which has long been said to have been planted by the poet: some of the monks, however, have begun to ascribe its planting to the more saintly hands of St. Philip Neri. Méry planted in Rossini's garden at Passy two slips of Laurel, one taken from a tree growing at Tasso's tomb at St. Onophrio, the other at Virgil's tomb near Naples; a crown of Laurel, formed from these two trees, was placed upon the composer's coffin. Legend will no doubt, in course of time, attribute the planting of the trees to Rossini. The noble Yew-hedge in the parsonage garden at Bishopsbourne, in Kent, is now said (so the Dean of Westminster stated in his recent sermon on Hooker) to have been planted by the greatest of English theologians. The planting of an Orange tree in the convent of Sabina, in Rome, is now attributed to St. Dominic, in the year 1200; and another Orange tree in the convent of Fondi, to the famous Dominican, St. Thomas Aquinas, in 1278.—*Chambers's Journal*.

Derivation of the name Horse Chestnut.—Messrs. Grindon and Salmoniceps (see p. 152) take me to task for assuming that the "mark of a horse-shoe" is the rightful derivation of the word "Horse Chestnut," whereas I merely claimed that this derivation was new to me, and less "far-fetched" than the two given by London, and in this I think many people will agree with me. The origin of names popularly applied to plants has generally some foundation, such as the likeness of an animal, or part of an animal, or its being the food of some particular animal. But I grant that most of the "horsy" things enumerated by these gentlemen are large, rough, coarse, rude, and unfit for human food, and as such take the prefix "horse," and I see no valid reason why Horse Chestnut should not be of the number, although I think they would find it hard to prove it. Were I inclined to be facetious, I should claim to have found the true mare's nest, by the print of her foot left on the branches while roosting there.—FREDERICK PALMER, *Versailles*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Indigofera floribunda.—This is now producing hundreds of pink spikelets of flowers at Messrs. Vetch's, and only requires to be seen to become popular. As an open-wall, alcove, and even as a border, autumn-flowering plant it has few equals.—W. P.

Cratægus MacNabiana.—This Thorn, which I saw the other day at Messrs. Osborn's, has not yet flowered, as far as I know, but its leaves are large and Oak-like, and quite distinct from anything in the way of Thorns with which I am acquainted.—P.

Pyramidal Trees.—Messrs. Osborn have a pyramidal-growing Tulip tree (*Liriodendron tulipiferum fastigiatum*) which promises to be a desideratum. They have also a pyramidal growing variety of *Acer Lobelii*, and a pyramidal Plane tree (*Platanus occidentalis pyramidalis*), all of which look as if they would prove useful additions to trees of that character.—W.

Hibiscus syriacus.—No shrub, or rather small tree, with which I am acquainted is now so beautifully in bloom as this. It forms a fine contrast to the dull sombre foliage by which it is everywhere surrounded. There are several varieties of this hardy autumn-flowering Hibiscus. Surely some of them should be introduced into shrubberies for the sake of variety.—P. WALLACE.

The Beech in Italy.—Magnificent natural Beech groves occupy the very highest points in many parts of the Appennines; relics of them may be found even on the Monte Sant' Angelo, near Naples; they exist on a far larger scale in the Sila of Calabria, where Professor Schouw, the Danish botanist, found the counterpart of his own Baltic vegetation; in wild Corsica they topple on the summits of the loftiest granite precipices, far above the Pine forests which are braced round the middle of the mountains.—*The Pilgrimage of the Tiber*.

Willow leaves.—I send you specimens of two different kinds of Willow leaves both gathered from one tree. Are such variations common?—A. D. [It is a mistake to suppose that the two specimens of leaves sent are the produce of the same plant, as the small bit with the narrow leaves belongs to the Rose Willow (*S. Helix*), the large leaves to the Grey Sallow (*S. cinerea*). The mistake may have arisen from a seedling Rose Willow having sprung up in a decayed part of the other, an occurrence not at all uncommon.—G. GORDON.]

Do Laurustinuses smell offensively?—This question has reference to an extract taken from a report of a meeting of the Malvern Local Board of Health, held on the 29th of July last, and which is as follows:—"The Inspector of Nuisances reported that he had received complaints respecting an offensive smell near Abbey Villa, but was unable to discover any nuisance. The Chairman said that it had been found that the smells complained of did not proceed from the sewers but from the Laurestine hedges. Any one who took particular notice would find that at times very unpleasant smells proceeded from those shrubs." Now, what I wish to know is, whether or not there are any good grounds for this statement, and I shall feel obliged by any of your correspondents furnishing me with information on the subject.—C. BUTLER.

FLOWER-GARDENING IN THE PARC MONCEAUX.

Among all the public gardens in Paris this is one of the most interesting, and one now, when both bedding and sub-tropical plants are at their best, well worth a visit. Like most other Parisian gardens, it possesses fine undulating breadths of fresh green turf, and it is also well wooded. Few English gardeners are aware of the trouble experienced across the channel in keeping turf moist and green; it is kept regularly watered during the hot weather with the hose, which is an indispensable adjunct to every French garden, and one on which the success of French gardening in a great measure depends. The Parc Monceaux is not very extensive, but the extreme breadth of treatment to which it has been subjected, and the judicious arrangement of the trees and shrubs, make ample amends for the want of space. The shrubberies are in many cases margined with belts of flowering and foliage bedding plants, while isolated groups of Yuccas, Ficus, Aralia, and other sub-tropical plants break up and relieve the formal edges so commonly met with in borders and shrubbery margins generally. The flower-beds are placed singly or in groups without any regard to mere formal or geometrical design; still they are very effective without in any case becoming obtrusive. One of the most

vigorously, and is one of the most graceful plants that can be used for warm positions on lawns or sheltered bays along the margins of shrubberies. A well-grown mass of *Anthurium macrorrhizum* and *Panicum sulcatum* is striking, while the many tropical plants here arranged outside afford an excellent illustration of the success to be attained by judiciously planting out many of our fine-foliaged stove-plants during the summer months. *Erythrina*s are quite at home here, and are now bearing bright coral-coloured flowers in luxuriant profusion. This plant does tolerably well planted out during our hottest summers, and it is one of the most distinct and beautiful of all plants for pot culture, though much neglected for that purpose now. Three small round beds, planted with silvery variegated Dahlias edged with *Coleus Queen Victoria*, looked pretty; but Dahlias generally do not succeed well about Paris. On a grassy knoll I observed a collection of Agaves arranged with good effect, and among them one or two specimens are throwing up strong flower-spikes. Several of the beds are carpeted with *Selaginella hortensis*, which, at some little distance off, can scarcely be distinguished from the turf. This grows quite freely, and gives a neat finish to the beds, besides keeping



The Drive in the Parc Monceaux.

effective beds or masses which I have seen for a long time is a large group of *Acer Negundo variegatum* near the centre of the park. This can be seen from nearly every point, and lights up the whole place with its snowy foliage. The base of this bed is planted with a belt of purple Phlox, which mingling, as it does, with the white foliage adds considerably to the brilliancy of the effect while the whole arrangement is very materially enhanced by a broad margin of *Pelargonium Stella* profusely covered with large trusses of deep scarlet flowers. Most of the beds here are oblong in shape, and very simply arranged, though not necessarily ineffective on that account. Sub-tropical plants have done remarkably well here during the past hot weather, and some of the leaves on a plant of *Caladium esculentum* measured 3 feet in length by 2 feet 6 inches in breadth. A fine mass of this *Caladium*, near one of the gates, looked remarkably healthy, and was neatly bordered with a belt of *Iresine Herbstii*. When in a sheltered position on a warm moist soil, few plants are more effective than this. Several beds and masses of hybrid flowering Begonias are looking extremely well, and *B. Rex*, on a dense carpet of *Alyssum*, was producing fine new leaves, and looked as fresh and as healthy as if in a plant stove, instead of being fully exposed in the open air. *Bambusa gracilis* also grows

the surface moist without the litter and trouble attending the use of mulching; still both have their own special advantages. A large mass of Madlle. Nilsson *Pelargonium* (rosy-pink), mixed with Madme. Vaucher (white), edged with a band of Harry Hieover (fiery-scarlet) made an effective combination; and a pair of oblong beds filled in the centre with a dwarf free-flowering *Erythrina* and *Gaura Lindheimeri* mixed, looked very pretty edged with the old *Gazania splendens*, a very effective plant in hot bright seasons. Groups of *Aralias*, Gum trees, and variegated *Yuccas* are judiciously arranged here and there, giving variety and interest to the grassy slopes; while two or three plants of the large-leaved *Musa Ensete* are in a most flourishing condition. *Cannas* luxuriate here both in beds and in isolated clumps, and *Bocconia* (*Macleaya*) *cordata*, Castor-oil plants, Pampas Grass, *Dracenas*, and Palms are everywhere noticeable on account of their health and freshness. A fine new ornamental Grass—*Gymnothrix latifolia*—is here growing luxuriantly, forming dense green masses of foliage 6 feet high, and half as much in diameter. This plant is worthy of careful culture, and, though not quite hardy, its roots can be removed with a ball and stored away in a shed, or, better still, in a cellar where frost is excluded, and where the temperature is

equable. Lantanas are compact in habit, and flower very profusely, much more freely than when grown indoors, either as masses or as individual specimens. One or two beds are here planted with them with excellent effect, and some standards on a sloping shrubby border mixed with Blue Leadwort—(*Plumbago capensis*), and backed with Erythrinæ, were very remarkable. A fine mass of *Papyrus antiquorum* formed a novel feature, and looked fresh and healthy. It is fringed at the base with *Cyperus alternifolius* on a carpet of Begonias. Several beds of the scarlet-flowered *Hibiscus sinensis* were blooming freely, and one mass edged with white-flowered Petunias, was very striking. One of the most effective beds in the park is an oblong mass of *Coleus Queen Victoria*, mixed with *Begonia nitida* and edged with belts of *Coleus Verschaffeltii* and Blue Lobelia. This formed a charming arrangement. Another striking group consisted of *Ficus macrophylla* on a carpet of the silvery-foliaged *Gnaphalium lanatum*. A large mass of mixed sub-tropical plants, in a shady position, was very effective, several Dicksonias being among them, with stems neatly covered with Moss, so as to keep them moist. Nearly every day these beds and clumps of sub-tropical plants are sprinkled with the hose, a system that not only preserves them fresh and free from dust, but also keeps them well supplied with moisture at the root. Not the least interesting feature in this park is its collection of trees, some of which are of considerable age. It consists for the most part of Elms, Limes, Chestnuts, and a few Acacias, Poplars, and Willows. The trees are judiciously arranged in bold masses, and the different shades of green, from the light tint of the Acacias to the deeper hues of the Elms and Chestnuts, stand out clear and bright beneath the blue sky so constant here all through the summer months. The light feathery-foliaged Acacias are a speciality about Paris, possessing, as they do, a lighter tint of green than any other tree.

Taken as a whole, the park is extremely interesting, and forms an agreeable promenade to thousands of Parisians during the summer and autumn months. Here, as elsewhere, in French public gardens I noticed an absence of the railings and fences so absurdly conspicuous in our public parks about London.

F. W. BURBIDGE.

BAD TASTE IN FLOWER-GARDENING.

It occurs to us that one of the greatest evils by which our gardens of the present day are characterised, speaking generally, is sameness, and the utter want in so many cases of recognising and acting on the distinctive natural capabilities of individual sites on which dwelling-houses are built and gardens laid out; but instead of this, a complete want of harmony between the natural position and the gardens themselves is produced. This, in the first instance, and the complete obliteration of all repose in the grounds, by trying to crowd every known thing in gardening and garden design into a given space which may only be adapted for one or more properly carried out, is one of the greatest monstrosities of the present day. The trying to copy in a small garden what is only adapted for a large one is productive of an abortion. It appears to us that the most objectionable thing in relation to small gardens is the entire destruction of anything like repose in the attempt to crowd too much into small places. This vain attempt to copy from other and quite opposite places every conceivable feature, where only one, or at most a few, would be appropriate, fritters out of existence that easy grace and repose for which nothing else can make up. From such gardens it is a great relief to escape to the open common or park, to look on a stately tree or graceful shrub standing free from some trumpery accompaniment which mars so much their beauty. Many illustrations could be given of grounds that might otherwise be massive and imposing, but which have been tortured into unmeaning masses by a crowd of intricate and puerile designs and combinations. Perhaps no more striking illustration of the utter want of ease and repose in any one portion of a garden could be cited than the Royal Horticultural Gardens at South Kensington; viewed from any point that can be chosen, there is not one single feature of ease and repose. The space is besmeared all over with intricate designing, and it scarcely ranks in respect of merit with a modern cemetery. In the centre of the Royal Botanic Garden in the Regent's Park, and looking either to or from the large conservatory, there is, on the other hand, to be found that breadth and repose, surrounded by easy and graceful lines, which to our mind are worth a thousand ginger-bread and misplaced designs. These remarks are principally applicable to the

main features of a place. To a certain extent the same principle holds good in the minor details of a garden. As, for instance, in the laying down of a series of flower-beds in the close vicinity of perhaps some previously established features in the shape of a stately tree or graceful shrub, features which should be held far too sacred to be encroached upon or marred by any paltry bed of evanescent flowers. Take, as a public illustration of what we mean by this, the long series of flower-beds which skirt Park Lane in Hyde Park. These form a far too crowded, continuous, and monotonous string of flower-beds, more like a nurseryman's trial ground than a flower garden. To our mind the turfing up of half the beds here would improve its appearance very much, and give it some repose in the shape of more greensward. But our special object in this case is to point out the "studied insult" which has been offered to the forest trees in this bed-making in Hyde Park, by placing round their trunks small butter-pat circles of such plants as *Alternantheras*, *Verbenas*, and paltry succulents. It is to be regretted that every place here, where there is room for a bed, has been thus nibbled up, and it is a pity that any such misplaced beds as those round the base of the forest trees should be exhibited in so public a place, to be perhaps copied by others. The spaces of green turf preserved round these trees would have given some repose where it is much wanted. This crowding of all natural features out of any given piece of ground by an everlasting fritter of tiny beds is surely no sign of progress; on the contrary, it reveals a vitiated taste in gardening.—*The Gardener*. [We welcome this protest against some of the glaring errors of our most conspicuous public flower-gardens; in this case, however, the evil does not arise from crowding a variety of features into a small space, but because the system of loud colouring in unending flat and formal masses is bad in itself.]

THE PROPAGATOR.

SANTOLINA INCANA.

DURING the next month or six weeks is a very good time to put in a stock of cuttings of this desirable hardy edging plant. We always propagate this class of plants in autumn, in cold frames, raised a little above the natural surface to ensure free drainage (they will do equally well under hand-lights). Two inches of ashes should be placed in the bottom of the frame to keep out worms. If this precaution is not taken, many of the cuttings will, in all probability, be drawn out of the soil, and the cutting-bed so honey-combed as to prevent their rooting. No great depth of soil is required—about 3 inches will be ample, which may be composed of sandy loam and leaf-mould (about a third of the latter will be a good proportion) and the whole passed through a half-inch sieve. When placed in the frames, it should be made firm, and a sprinkling of any coarse kind of sand on the top. The best cuttings are the small side-shoots; and, after being dressed with a sharp knife, may be dibbled in 1 inch apart all over the frame. We usually place the frames on the north side of a wall; but any other position will do for them—only, if exposed to the full sunlight, more attention will be required in watering, shading, &c., whereas on the north side all the attention required is to open the lights for an hour or two on the mornings of fine days, just to change the air inside. In March, the frames may be taken off and used for other purposes, and the little rooted plants may be finally planted out in April or May. Planted about 4 inches apart, and cut in three or four times during the season with the shears, they make neat and durable edgings. Its compact habit of growth makes it alone a desirable plant to have in large numbers for carpet bedding. It is comparatively easy to plant a garden when one has a good stock of plants, always supposing, of course, that the necessary taste and judgment are not lacking; but taste and judgment will not compensate altogether for a dearth of materials, and I have always found it desirable, so far at least as hardy plants are concerned, to do all the propagating in the autumn, and so relieve the pressure that is sure to come in the spring where much bedding-out is done.

E. H.

Fuchsia Seeds.—Would you kindly inform me how seeds of Fuchsias are extracted from the dried pulp for sowing. I should fancy that if they were picked out a good many seeds would be spoilt. Also, how one ought to manage with regard to Strawberry seed. Mr. Cannell, the great Fuchsia grower, who has had ample experience in such matters, says:—"When the seed pods are thoroughly ripened, partly dry them in the sun, after which cut them in halves and quarters with a moderately sharp knife, and minutely examine each part, the old self-coloured varieties produce seed very freely, but the choice kinds very sparingly, particularly the light varieties. An abundance of hollow seed will be found, but good plump seed is about half the size of that of the Pansy, and easily distinguished and picked out."

A PALM GROVE.

PALMS, in the form of single specimens, as seen here and there in this country, are familiar to most of us, and even miniature forests of them may be met with at Kew, Chatsworth, and elsewhere; but, interesting as such collections undoubtedly are, they convey but a faint idea of what a Palm forest is in tropical countries. Speaking of a Palm grove in its own sunny land, the Rev. Charles Kingsley says:—"It is a sight never to be forgotten, to have once seen Palms breaking through, and, as it were, defying the soft rounded forms of the broad-leaved vegetation by the stern grace of their simple lines; the immovable pillar-stem, looking the more immovable beneath the toss, and lash, and flicker of the long leaves as they awake out of their sunlit sleep, and rage impatiently for a while before the mountain gusts, and fall asleep again. Like a Greek statue in a luxurious drawing-room, sharp cut, cold,

else. It sometimes reaches a height of about 8 feet, and is surrounded by smaller plants of the same, in every stage of growth, from the seedling springing from the ground a few inches high to plants of the height just mentioned. Such masses vary from groups of 10 to 20 feet in diameter, whilst solitary plants are dotted about everywhere throughout the forests. On nearing tropical countries by the sea Palms are invariably the first objects that arrest attention, their tops often being visible long before the low-lying sandy shores even come into view. Such Palm groves as that represented by our wood-cut are sights of common occurrence in all tropical countries.

PETER WALLACE.

A Golden Bindweed.—This fine Bindweed, or Golden Morning Glory of the Americans, was found by Professor George Davidson, of the United States Coast Survey, on his recent expedition to Lower



A Palm Grove.

virginal; shaming by the grandeur of mere form the voluptuousness of mere colour, however rich and harmonious—so stands the Palm in the forest, to be worshipped rather than to be loved." Such a scene I have witnessed myself, and can fully verify Mr. Kingsley's beautiful description of it. I have met with Palms in masses, where for miles no other vegetation disputed their supremacy, save plebeian undergrowth. Such forests, when looked down upon from some neighbouring height, have an appearance far surpassing that produced by a less stately vegetation. Whether it be the plume-like foliage of the Cocoa-nut, which is one of the most graceful and rapid-growing of Palms, or the fan-shaped leaves of *Coryphas* and *Chamærops*, the effect is the same. One of the latter—I believe *Chamærops Palmetto*—gives to the forests of Louisiana and Texas one of their most pleasing features. The under-growth of these forests for miles consists of little

California (at San Juan del Cabo, 25 miles west of Cape San Lucas, latitude 23° 03') to establish or verify the former site of the ancient observatory of the transit of Venus. The genus *Aniseia* was formed from plants separated from the old *Ipomœa* and *Calystegia* species of *Convolvulaceæ*, owing to the unequal size of the scales or the green cup of the flower. This is, therefore, one of the many forms of Morning Glories, so well-known to florists. These twiners possess rare beauties, as do many plants that prettily wind and festoon the shrubberies and lattice-work of rural retreats. White and blue, pink and purple are the prevailing hues of this family of flowers, yellow being relatively a rare colour. This has also the advantage of a deep dark purple eye and tube, and of fine size. It is a perennial. These points must commend it to the attention of horticulturists. The above remarkable plant is figured in the *California Horticulturist*, with a description by Dr. Kellogg, whose account of it induces us to hope that a novelty so striking and ornamental may soon be introduced into our gardens.

THE FRUIT GARDEN.

THE ORCHARD HOUSE.

By PETER GRIEVE, CULFORD GARDENS.

(Continued from page 189.)

SOIL SUITED FOR FRUIT TREES.

PERHAPS the best description of soil for the purpose of growing fruit trees of all sorts, under glass, whether in prepared borders or in pots, is the top spit of a pasture of tolerably tenacious loam. This should be cut of a thickness not exceeding 3 or 4 inches in depth, and if cut some six months or more before it is required to be used so much the better, although some cultivators prefer using it as soon as it is cut, and I am not aware that there are any decided objections to doing this. But I would, nevertheless, prefer using it when it had lain about the time I have stated, and after it had been mixed with about one-fourth of its bulk, more or less, of well-rotted-farm-yard manure, and had been several times turned. When this has been done the vegetable matter contained in the soil will, to some extent, have become decomposed, and in a fit state for supplying plant food. When about to be used, if considered in any degree too light, a portion of well-pulverised clay, or of the "runnings" of a clay-pit, may with advantage be added to it. And if, on the other hand, the compost should be found to be of a too tenacious nature, then sand or lime-scrapings from old buildings should be added. And under any circumstances, unless the soil is naturally somewhat calcareous in character, a portion of the latter material should by all means be used. At an early period during the month of October the quantity of this compost likely to be required should, if possible, be got under cover, in order to become partially dry, and in a fit state to handle and use for potting or planting the various sorts of fruit trees.

FURNISHING AN ORCHARD HOUSE.

During the month of October or early in November is the most suitable time to furnish an orchard house with the necessary number of fruit trees. In doing this it is, no doubt, the most economical, and, perhaps, in the long run, the most satisfactory plan, to commence with "Maiden trees," more particularly as regards Peaches and Nectarines, also Apricots. But if it be desired to have fruit at the earliest possible period, and if the expense of purchasing potted trees be not objected to, they can generally be obtained of any desired form and size in most nursery establishments. We will suppose, however, that it is intended to commence with "Maiden" trees, that is, trees which have been budded some fifteen or sixteen months, and have each developed one shoot, more or less vigorous. In making the selection, choose trees which have formed straight well-ripened shoots, some 3 or 4 feet in length, more or less. Whether it be intended to grow the trees permanently in pots, or ultimately to plant them out in prepared borders or beds of soil, it will, at all events, be advisable to grow all in pots during the first season. As soon as the trees have been taken out of the soil, let their roots be slightly cut back with a sharp knife, and at once potted carefully in a portion of the compost which has been already described, using well-drained pots some 10 inches in diameter, not larger, as they are only intended to remain one season in these pots. The soil used ought to be tolerably dry, and the trees should be potted rather firm, using a light wood rammer with which to press, or rather to pound down, the soil. A few days after being potted, they should have one good watering to settle the soil somewhat, and may then be wintered in any convenient situation, in the orchard house or elsewhere, and, to save space, may be placed tolerably close together, and the pots plunged or covered with dry leaves, or some similar material. The pruning should be delayed until the trees are about to break into leaf, and when this is the case, let them be set further apart, each pot being placed upon a border of light soil; tie up the leading shoot or stem to a stake in order to keep it quite straight, and shorten it to some 3 or 4 feet, by cutting back to a good wood bud, and cut in the lateral shoots to within two or three buds of the stem. As growth progresses, tie up the leading shoot to the stake, stop rival leaders, or any over luxuriant shoots, and use every means to induce each tree to assume a

pyramidal form, as this is, without doubt, the most desirable form for a fruit tree under glass. A considerable tendency will be evinced by the trees, for a time, to make over vigorous growth towards the upper part of the stem; this must, however, be prevented, as much as possible, by close attention to stopping, or pinching the too luxuriant shoots, and encouraging the development of the lower branches. But in cases where, in spite of every attention, the lower branches of any tree may fail, it can then be allowed to assume the form of a bush or half-standard tree. As the season advances, the trees will require abundance of water, but stimulants in the form of surface dressings, or manure-water, will not be required during the first summer. There may, probably, be a tendency on the part of some of the trees to root into the border on which they stand; this need not be allowed, however, unless the pots are well filled with roots, the securing of this being one of the two objects at present in view, the other being the production of healthy, and not over luxuriant, wood. By the beginning of the second week of November this wood should be ripe, and most of the leaves will have fallen. Those trees which are intended to be grown in pots should now be shifted into what may be called their fruiting pots, viz., pots some 15 or 18 inches in diameter, which should each have five holes, of about an inch in diameter, in the bottom, in order to allow the roots, when considered necessary, to penetrate the border upon which the pots are placed. In most instances, it will not be necessary to allow the trees to do this during the first season after being put into their fruiting pots. It must also be borne in mind that this permission to the roots to enter the border is always under complete control, and when any tendency to over luxuriance on the part of any tree enjoying this privilege is observed, it can be at once checked by tilting the pot on one side, and severing one or more of the roots. Place a small portion of littery manure or Moss over the drainage of the pots, to prevent the soil from mixing with it, and thereby rendering it ineffectual; and upon this place some of the rougher part of the compost which has already been recommended. The trees must now be carefully removed from the pots in which they have been growing during the preceding twelve months. And when their roots have been carefully disentangled and set at liberty, let them be re-potted as firmly as possible in the larger pots. When this has been done, place the pots perfectly level upon the surface of the border intended for their reception, and raise them slightly above it, by placing two bricks under each pot. This will prevent the roots from entering the border at present, and will also allow the water which may drain from the pots to pass freely away. Place the trees at a distance of 3 feet from stem to stem. They should now receive one good watering, and may soon after this be covered up with dry leaves or litter, and so remain during the winter months. When it is intended to plant the trees out in the borders of the house, these should be prepared for them by throwing out the natural soil to a depth of not less than 2 feet, placing 6 inches of broken bricks or flints at the bottom for drainage; cover this with turves cut from some road side or pasture, placing the grassy side next to the drainage, and fill up the border with suitable soil, which may be similar to what has been recommended for the potted trees. The trees intended to be turned out should now be taken from their pots, the roots disentangled, and carefully planted in the borders, spreading the roots well out at the time of doing so. The soil of the bed or border should now be rendered quite firm and solid by being well pressed or trodden down. Afterwards level the surface of the soil, and allow it to remain so for about a week, when a good watering should be given. And, soon after this, mulch the surface with half-rotted manure, and allow it to remain so during the winter. This period of potting, or planting out, as the case may be, will be the commencement of the second season of the trees' existence as orchard-house trees. Pruning need not be commenced until the following spring, when the shoots should be shortened, and the formation of the trees attended to. This should be more the object of the second season's culture than the production of fruit, although some of the trees may be allowed to bear a few fruits even so early as their second season. In making the foregoing remarks, it has been taken for granted that the house or houses, as the case may be, had

been furnished with "Maiden," or very young trees. But they are at the same time equally applicable to trees which have been cut back, and which have been once or twice transplanted. When the month of November again arrives, these trees of various sorts will have completed their second year in the orchard house. Each tree will most likely have ripened a few good fruits, and, what is of more importance, will, with the necessary attention, have grown (whether planted out or in pots) into nice pyramidal, or otherwise, well-formed trees, with well-ripened wood, and abundance of bloom buds. If such kinds as the Peach, the Cherry, and the Plum trees have been much infested with insects, such as the green and the black aphid, red spider, &c., it may then be advisable to prune the trees at once, and dress or paint them with tobacco-water, rendered of the consistency of thick paint by the introduction of about equal parts of flowers of sulphur, lime, and soot; put on with a soft painter's brush, taking care at the same time to avoid injuring the bloom-buds, or fruit spurs. But, if insects have been well kept under (as it is desirable they should be) by constant syringing, fumigation, &c., then this winter dressing will not be required, and the trees need not be pruned until the end of February. In the meantime the surface of the border where the trees are planted out may at once be pricked over with a fork, to a depth not exceeding 2 inches, and immediately covered with a good mulching of rich half-rotted manure, which should be allowed to remain on until the fruit is fairly set. The water which the border may from time to time require should be poured upon this mulching, from which it will carry the fertilising properties it may contain into the soil. The mulching will also, to some extent, prevent evaporation, and render less water necessary. When it has become quite dry and exhausted, it may once or twice during the growing season be renewed. The trees growing in pots should also at this time have the surface soil removed to a considerable depth, and replaced by a rich surface dressing, composed principally of horse-droppings. The two bricks which have hitherto kept each pot above the surface of the border, should now be removed, and the pots be allowed to stand upon the soil, into which the roots will soon penetrate. This border should, of course, be composed of suitable soil, to the depth of about 1 foot. As soon as the fruit of the various varieties of trees have been properly thinned out (being careful not to leave on any tree too heavy a crop), let the top-dressing, which it may be supposed will by this time have become to some extent exhausted, be removed and replaced by another composed of similar materials. To facilitate this process, pieces of zinc should be employed, of some 5 or 6 inches deep, and of the necessary length to go quite round the inside of the rim of the pots; this will afford space to give an ample surface-dressing to the plants. About the middle or the end of July, when the fruit is fast swelling off, it may again be advisable to remove this surface dressing, and replace it by another. But this will, of course, in a great measure, depend upon the amount of fruit the trees may be bearing, and upon the health of the trees, &c. Liquid-manure may also be occasionally administered to the trees, if thought necessary, but, with the liberal surface-dressings recommended, the roots being also to some extent allowed to enter the rich border on which the pots are placed, this will not be found to be greatly required at present. At the end of the third season of the trees, as inmates of the orchard house, they should be taken out of their pots altogether, not with a view of giving them larger pots, but in order to re-arrange the drainage of the pots, give a portion of fresh soil, &c. Some little difficulty may be experienced in effecting this operation, which is, however, readily enough overcome in the following manner. Let the pot containing the tree to be re-potted (the soil of which should have been allowed to become somewhat dry), be thrown upon its side, and while one man pulls gently by the stem of the tree, another, with a wooden mallet, forces a blunt pointed stick into first one and then another of the five holes in the bottom of the pot. This will soon be found to loosen the tree in its pot, so that it can soon be drawn altogether out of it. The ball should now be considerably reduced, picking out the soil carefully without injuring the fibrous roots. It will generally

be found that some strong roots, in making their way into the border, have to some extent filled up the holes in the bottom of the pot, deranging and rendering the drainage ineffectual, &c. These strong roots should now be cut well back, and after the pot has been well cleaned inside and outside, the drainage re-arranged, &c., the trees should be at once re-potted in suitable soil, which should be pressed around the ball as firmly as possible. The pots should now be placed upon the border the same as before. But if the trees have considerably increased their dimensions, it will also be necessary to considerably increase the distance from stem to stem of each tree. At the end of the third season it may also be advisable to examine the roots of the planted-out trees, and, if found necessary, root-pruning, to some slight extent, may be practised with advantage.

These somewhat lengthened observations will now come to a close by an attempt to inquire (as concisely as possible) into the advantage of growing fruit under glass, and as to the adaptability of the various kinds of fruit trees to orchard house culture.

(To be continued.)

UNFRUITFUL FIG TREES.

Will you kindly say whether it is possible to bring old and long-neglected Fig trees into bearing condition, and by what treatment? Those in question are on the back wall of a cool greenhouse, and have an espalier covered with Peach trees between them and the front of the house, which faces the south. Do you think Figs would ripen well in such a position, and, if so, what kinds would be most suitable, i.e., if it be necessary to remove the old trees?—PAXTONIA.

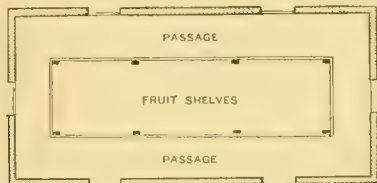
[A good Fig grower (Mr. Westland, of Witley Court), to whom your case has been submitted, says:—"I have never known Figs to succeed under the shade of other trees. Under such conditions they neither develop nor ripen their fruits in perfection. Where a more suitable structure cannot be afforded them, more satisfactory results would, doubtless, be attained from keeping the plants in pots, so placed as to receive the full influence of the sun—a point which is essential to perfect maturation of the fruit. In a mixed house of Figs and Peaches, under natural conditions as to soil and culture, there is, however, no good reason why Fig trees should not succeed upon the back wall. Your correspondent's trees are probably barren, owing to overcrowding of the wood, over luxuriance, or unrestricted action of the roots, or a cold wet undrained subsoil. If the branches have been bundled together for years nothing can be done until such time as their leaves have fallen. Then thoroughly regulate the shoots, so as to cover the space, selecting the medium-sized ones, and cutting them off at different lengths, laying them in about a foot apart. With a slight assistance from the syringe in spring, shoots will be freely produced, both upon old and young wood. These must be removed, except such as are required for permanent use, and, as they advance in growth, the terminal bud must be sedulously pinched out at about the fourth joint. This is an important matter in the cultivation of the Fig, and must be attended to frequently when it is in active growth, as shoots push up very quickly, and, if long neglected, recourse must be had to the pruning knife, which is undesirable. An unrestricted root-run is also often the cause of unfruitfulness, and this is a point to which attention should be paid when positions for the trees are being prepared. If, upon examination, it is found that the trees are running riot in the border prepared for the Peaches, it will be best to lift the Figs, shorten their roots to about 5 feet from the trunk, and to plunge them outside, until the conditions under which they have been placed are fully examined, and the drainage rendered complete. If the subsoil is at all cold and wet it must be concreted, leaving above it a depth of 3 feet for soil and drainage, thus placing the trees entirely under control. The roots should be confined to the border by means of a brick wall, and in erecting this it is necessary that precaution be taken to secure perfect drainage and that the drainage tiles are so arranged that any superabundant moisture that may be given may be quickly removed without stagnating about the roots. The border need not exceed 6 or 7 feet in width. A calcareous turfy soil is to be preferred in which to plant the trees, adding lime-rubble in order to secure free permeability to water and unrestricted action to the roots. As regards soil the Fig is not at all particular, it will succeed in almost any soil that is friable and sufficiently rich, without the addition of manure. Stimulants may always be given, where requisite, in the shape of top-dressings and liquids, before filling in the soil of the border; a turf may be placed, grass side downwards, upon the broken rubble, carefully covering the drain pipes; the roots, too, should

be carefully laid out and firmly packed in, keeping both trunk and roots somewhat high at the time of planting, in order to allow for subsidence of the soil. With such attentions as these I have no doubt that perfect success will be the result, and that fruitfulness will be promoted without destroying the tree. Should replanting, however, be determined on and young trees be wanted for the purpose, select from such free-bearing roots as Grosse Verte, Figue Violette, Raby Castle, Brown Turkey, Ail de Perdrix, White Marseilles.”]

KEEPING APPLES.

WE offer a few notes of some observations and experiments made with reference to the best way of keeping Apples in cellars or fruit-rooms, for common family use. Fruit will always keep better if the open air is excluded. We have found that, by simply wrapping Apples in paper, the protection thus afforded, chiefly no doubt against sudden changes of temperature, was perceptible, but not great. A greater number of specimens decayed within a given time when exposed. For the same reason Apples will keep longer when barreled and headed up than otherwise. There is, however, a serious difficulty with this mode. The owner cannot know when decay commences, and, when once it has begun, it goes on more rapidly in consequence of the confined air. On the whole, therefore, and for common use, we find a series of shelves the most convenient contrivance. The accompanying plan represents the arrangement we have made. The fruit-room is separated from the rest of the cellar by an eight-inch brick wall, and the bottom and sides are covered with water-lime cement. The cement excludes moisture, and prevents decay, so that the fruit rather tends to shrivel if not ripe enough when picked. The windows are hung on hinges, so as to be opened by hooking up to any required degree for ventilation. In cold weather they are kept open enough to bring the temperature down to nearly freezing, and when there is warm weather (warmer than the heat of the earth) they are closed.

When the fruit is gathered in autumn it is stored in an out-building facing the north, and kept as cool as practicable until within



Ground-plan of Fruit-room (Fig. 1).

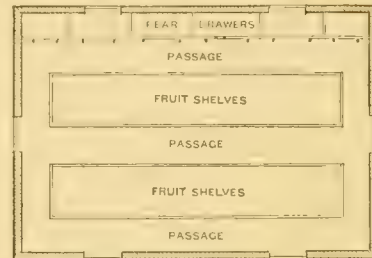
a few days of the usual freezing up of winter, when it is removed to the shelves of this fruit-room. These shelves are placed one above another, and are supported by the upright timbers (made dark in the engraving), with space enough between them to allow picking over by hand. The passage around admits ready access, and facilitates the proper circulation of air. A thermometer enables the attendant to preserve a low temperature without freezing. When the first decayed specimens are seen they are promptly removed, and, by examining every few days, the very beginning of decay may be detected by a practised eye, and the Apples picked out and used for culinary purposes. If this examination or assorting is well attended to, and the room kept cool, very few decayed specimens will be found, and the ordinary demand will require a portion of the sound ones. Experience will enable the attendant to select such sound ones as will not keep long. The stratum of Apples on the shelves is never more than a few inches thick, requiring but little disturbance to pick them over, as the less they are handled the better.

In order that Apples may keep well, it is important that they be gathered from the tree as near the right time as may be, but there is no period when all will be at precisely the proper degree of maturity, some being over-ripe and others yet immature. There is a general average, however, which attention and observation, with some experience, will enable any one to reach. The over-ripe specimens, when removed to the cellar or Apple room, will be likely to decay first, and should be first picked and used. The unripe ones will shrivel and should also be used. Of the remainder, it will be difficult to know beforehand which will decay first, and they must therefore be occasionally examined. After many years of trial, we find this by far the most convenient and perfect way to keep Apples which are to be daily used; and by giving personal attention to the picking, or committing it to a trusty man, our Apples keep longer than by barrelling, and go further.

By a successive removal of decaying specimens, the number re-

maining will be gradually reduced to a few very long keepers; and it has been our practice to select a few bushels of the best of these on the approach of the warm weather of spring, and place them in shallow boxes with lids, and slide them under the lower shelf. Protected in this way, and in contact with the cold cellar bottom, with the addition of an occasional assortment, we sometimes have sound, fresh specimens of some varieties at mid-summer. The hot weather usually commences about the middle of June, and after this date they begin to lose their flavour. For table use, therefore, we do not expect to retain a supply after fresh Strawberries have ripened, and never later than the first of July—at which date we had good Apples this year.

The boxes we have just spoken of, are those which have been previously used for storing winter Pears, the Apples occupying their place

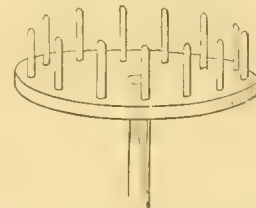


Ground-plan of Fruit-room (Fig. 2).

after they are gone. The fruit room which we have employed is 11 feet wide and 33 feet long; the shelves are 5 feet wide in the clear, and a space of 2 feet between them allows free admission for examining and picking over. There is ample room on the shelves for storing sixty or seventy bushels, which afford a free supply for stewing, baking, pies, and for dessert, during several months, for a large family, with some to give away, if treated as already described. Unassorted, they would not last half as long. For establishments where a larger supply is desired, the fruit-room may be arranged as shown in fig. 2, where there are two series of shelves, besides another of Pear drawers. We have found, however, that by the use of the neat shallow boxes, with lids, already alluded to, we can conveniently store all our winter Pears, affording more than we can use till mid-winter, when they are succeeded by Apples. The Pear boxes are placed under the lower Apple shelf, where they keep cool, are well protected, and are easily drawn out for occasional examination. Drawers would, however, be still more convenient.—*The Cultivator.*

A BELGIAN FRUIT GATHERER.

I HAVE just seen the waiter at the hotel here gathering Pears from a late Pear tree in a way that was quite new to me, and worth a note. He had a pole 10 or 12 feet long; on the top of this was



fixed a thin disk, about 6 inches in diameter, set with wooden teeth, just like the teeth of a hay-rake. Carefully placing this under a Pear, so that the Pear rested on the disk, and giving a slight twist, he at once detached and brought down the Pear unbruised.

Hotel de Commerce, Bruges.

H. N. ELLAQBME.

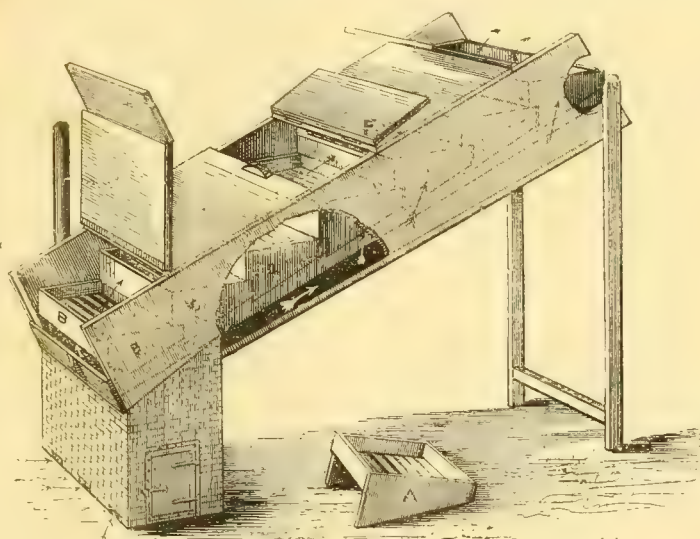
A Prolific Apricot Tree.—In the kitchen garden at Malshanger Park, Basingstoke, the seat of Wyndham S. Portal, Esq., there is a remarkable old Turkey Apricot tree, to which an age of three-quarters of a century is assigned, and which completely covers a piece of wall nearly 40 feet in length and 11 feet in height. The tree has a fine vigorous growth, the branches do not decay, and it invariably bears large crops of fruit. This year it is computed that it will yield rather over 150 dozen of fruit; in 1871, 200 dozen were taken from it. It has been thought that the longevity, freedom of cropping, and vigour of this Apricot may possibly indicate that it

is a seedling, not a worked tree; but, on the other hand, it is asserted that there are worked trees of great age and dimensions that also produce large crops of fruit. It may be added that chalk abounds in the Malshanger district, and that the kitchen garden is highly calcareous. Mr. Kneller, the gardener at Malshanger, writes to us to say that he will have much pleasure in showing this tree to anyone who may have the curiosity to inspect it.

THE BEST FRUIT-DRIER.

SAMPLES of various dried fruits of rare excellence have recently been submitted to us for inspection. Apples, Peaches, Pears, Grapes, and Raspberries of different kinds which were examined, seemed to have lost little except the water which formerly gave them plumpness, and a larger proportion of the sweetness and proper flavour was retained than in any fruits of the kind we had previously seen. On examining the method by which such products were obtained, we found it of such simplicity, cheapness, and certainty, that its importance to both fruit-growers and consumers warrants its being brought prominently to their notice. Of this apparatus the annexed is an illustration. Its essential parts consist of—1st, a box or tube (T), one end of which is supported by brick-work (E), the other end rests on adjustable supports, by which the box (T) can be elevated to any desired angle; 2nd, slat-bottomed trays (A B C D) for receiving the fruit. These trays when placed in the box (T) rest on cleats, in which notches are cut, on which the lower edges of the trays rest. Inside the brick-work (E), the heating apparatus is placed. This may be a wood or coal stove, or a steam coil, or other suitable heater. When in operation, the heater being ready, a tray (A) filled with fruit is introduced at the lower end of the box immediately over the heater, and the box is closed by shutting the hinged covers (F). The hot air now passes up through the fruit, carrying with it a portion of its moisture, and finds egress at an opening at the upper end of the box. This opening may be protected from dust by a screen of netting. By the time another tray of fruit is prepared, the first is sufficiently dry to be pushed forward one notch by introducing the second tray at the lower end. In this way successive trays are introduced, and the preceding trays pushed forward until the first one reaches the upper end. By the time this is done, in fair drying weather, the fruit is ready to be taken out and packed for market. The smallest sized apparatus, as usually made, will keep two persons employed paring fruit ready for the drier. This is rapid work, and its rapidity, and also the excellence of the dried fruit when turned out, is due to the arrangement of the trays in the box.

In driers heretofore made, the trays have been arranged one above the other, so that the hot air from lower trays passed through those above. This in its passage became steam, gave the fruit a cooked taste, carried away much of the aroma, and had little drying power after passing through several trays. In the American drier, two flues are made by the continuous line of trays. The hot dry air passes along the lower flue, and up through the fruit, ready to absorb and carry away its moisture; the hot moist air, emerging from a tray, passes along above the fruit through the upper flue to the exit. The apparatus is patented, but the company owning the patent make terms so favourable, that most people having an orchard will find it profitable to use it in saving their surplus fruit.—*American Agriculturist*.



Improved Fruit-drier.

be condemned by the sanitary inspectors, but that *unripe* fruit will meet with a similar fate. This is a most timely piece of advice, and one which we gladly second. The recklessness with which green fruits, especially Apples, are hawked about the London streets, should certainly receive a check, for there can be no doubt that, of the two, immaturity is a more common and quite as potent a cause of disease as decay. The deficiency of sugar, and the excess of free acid and cellulose in unripe fruit, render it irritating and indigestible. It is, from a chemical point of view, nearly valueless as an article of diet, and when taken into the stomach serves merely to cause colic and diarrhoea, and to prevent the assimilation of whatever wholesome food may have been eaten. As to the wastefulness of picking fruit before it is mature, we will say nothing. "Although," says the *Pall Mall Gazette*, "there are children, and even grown-up people, who will devour anything in the shape of fruit, even though it may be as hard as a bullet and sour as vinegar, yet it is doubtful whether in these days, when cholera is looming in the distance, it is safe to venture on any experiments of this nature."

The Mango.—The Mango is a fruit which tries the palate in an eccentric way, delighting the stranger at one time with its delicious flavour, and disgusting him at another by leaving a taste in his mouth which travellers have said may best be realised by licking a newly-painted door. The Mango is common in all parts of the East, and in South America. Those of Massagong, near Bombay, are the best, and those of Brazil the worst. In shape and appearance it is something like a very large yellow Plum. It has a large, flat-tish oval stone, to which is tenaciously attached by fibres a juicy yellow pulp which is very refreshing, but which it would puzzle the compiler of a handbook on etiquette to tell you how to eat "elegantly," unless you use a teaspoon, but even then you will come to a difficulty, for you have to hold the Mango as well as to eat it. The correct way is to sit before a tub of water with a napkin round your neck and a dish of Mangoes within easy reach, not, as I have seen it stated in a traveller's account of a trip to Brazil, to enable you to dilute the turpentine by dipping your Mango in the water, but that you may enjoy your juicy awkward fruit regardless of the mess it leaves you in. It is always well to take your first bite at a Mango carefully, to see whether it is a turpentine one or not. Green, it makes an excellent pickle; and ripe, a moderately good jelly.—G. W.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The Ribston Pippin Apple.—In Mr. Young's garden at Upper Teddington is probably the finest Ribston Pippin Apple tree anywhere to be found. It is upwards of 30 feet in height, and nearly as much in diameter. It is in most perfect health, the leaves and shoots having all the appearance of those of a young tree. It is now bearing what may be termed a fair average crop, and the fruit promises to be as fine as I have ever seen it.—*PETER WALLACE*.

American Peaches.—Mr. Quin, a well-known fruit-grower, of New Jersey, and one of the editors of the *New York Tribune*, says: "I returned home from Europe with the firm and proud belief that with Apples, Pears, and Peaches, we can beat the world, in size, quality, and production." Mr. Quin is right about the Pears and Apples; and, probably, the natural advantages of many parts of America will one day make the statement true of Peaches. But if the European grower is to judge of the quality of American Peaches by what is seen in the shops in American cities, Mr. Quin is very wrong indeed, for the fruit is such as no English gardener dare send to the table under the name of Peaches.

A remarkable pair of Pot Vines.—A pair of pot Vines of unusual excellence was shown at Manchester the other day by Messrs. Lane of Berkhamstead. One of these, a Black Hamburgh, had thirty-two clusters of Grapes on it; the other, a Foster's White Seedling, had thirty-four clusters, and they were all of good size, well ripened and coloured. They were growing in 14-inch pots in a compost of loam mixed with some manure, and have had the benefit of having their pots plunged a little whilst growing and swelling their fruit; inverted pots being placed under them to prevent the egress of roots from the holes in the bottom of the pots. Both were remarkable examples of good Grape growing in pots.—F.

Unwholesome Fruit.—The *Pall Mall Gazette*, in commenting upon a recent conviction for selling decayed Cherries, draws attention to the scope and meaning of the words "unfit for human consumption," and expresses a hope that not only decayed fruit will

THE GARDEN IN THE HOUSE.

TABLE DECORATIONS AT THE CRYSTAL PALACE.

At the autumn show, held at the Palace the other day, there were a good many exhibitors in both of the classes set apart for table decorations. The winner of the first prize in the open class, as well as in that for amateurs, was Mr. Hudson, Champion Hill, Cumberwell. On this occasion the decorations consisted of fruit and flowers combined, and not of flowers only, as at former shows held there. This was a happy thought, inasmuch as it is one thing to arrange stands of flowers, and another those of fruit; those who may be highly successful with the former are often quite the reverse with the latter, and this, I am sorry to say, was very observable at the Palace last Saturday, many exhibitors, who had been winners of first and second prizes on former occasions, being quite thrown out, owing to their total mismanagement of the fruit. The decorations of the first prize table in the open class consisted of three graceful Palms, the centre one being the tallest. Round the stems of these were twined sprays of *Lygodium scandens*, while round the base of the centre plant were put the following flowers, viz., blooms of *Eucharis amazonica*, *Lilium lancifolium rubrum*, scarlet *Amaryllis*, *Stephanotis*, pink *Begonia*, blue Corn-flower, blue Larkspur, wild Grasses, Maiden-hair Fern (*Adiantum cuneatum*), and some leaves of Pampas Grass, the whole being finished off with a wreath of light Ferns, which extended out on the cloth. The vases belonging to the outside Palms were in much the same style as the centre one, except that Roses and Jasmine were added to the other flowers named. There were several specimen glasses, each containing a Rose-bud. The fruit consisted of (at the top and bottom) Grapes and a Melon; these were placed on rather high stands. There were also four glass baskets, containing Plums, Peaches, Nectarines, and Pears. Round the handles were twined sprays of *Lygodium scandens*, and, through the fruit, fronds of Maiden-hair Fern. Indeed, it was in the arrangement of his fruit that Mr. Hudson made his great hit, that of the Melons being simply perfection. In the decoration of the first prize table (amateurs), three March stands, with trumpets issuing from the dishes, were employed. The flowers in the three bottom dishes were the same, and consisted of blue *Agapanthus*, blue Forget-me-nots, *Eucharis amazonica*, *Amaryllis* (scarlet), *Gypsophila*, Grasses, and Maiden-hair Fern. Up the stems was *Lygodium scandens*. In the second tier of the centre stand were four blooms of *Pancratium fragrans*, &c., drooping round the edge; four blooms, two white and two red, of *Lapageria*, and Maiden-hair Fern. In the top trumpet were long fronds of a light Fern, which drooped gracefully down to the top dish; and amongst them were white Orchids, wired, and which had a good effect. The other flowers used were Forget-me-not, blue *Salvia*, and a long spike of a scarlet *Pentstemon*, Grasses, and Ferns. The top dishes of the end stands matched, and consisted of *Eucharis*, white *Bouvardia*, scarlet *Lapageria*, and Maiden-hair Ferns; in the trumpets were *Bouvardia*, Forget-me-not, blue and white Corn-flower, a spike of pale tinted scarlet *Pentstemon*, and drooping round fronds of *Pteris serrulata*; the specimen glasses had a Rose-bud in each. There were eight dishes of fruit. There was a class for one centre-piece, consisting of Grapes and foliage; and here, again, a want of knowledge of how to arrange fruit properly was very visible, all the stands staged being far too heavy and packed-looking. The best was that to which was awarded the first prize; it was exhibited by Mr. Bones, of Romford. It was a March stand containing white and green Grapes, through which were mixed Ferns and variegated Maple leaves. This stand was far ahead of the others in its arrangement, but still it was too heavy. A. H.

ROOM FERNERIES.

THERE is no more beautiful adornment for a house in the wintry season than an indoor Fernery, and as it requires but little attention or sunlight, it is a decoration which is within the reach of most of us. A simple stand, which can be made by any carpenter or house-joiner, and can be furnished with legs like a table, is required. Into this there should be fitted a zinc pan, from 3 to 4 or 5 inches in depth, according to the size of the Fernery. If it is small—say 2

feet in length by 16 inches in width, 3 inches will be depth enough for the pan. But larger-sized Ferneries are the most desirable. The handsomest one I ever saw was 3 feet in length and 2 feet in width. The zinc pan must be painted green, and the glass cover be either air tight or nearly so as it can be made, and placed over the pan, or else fastened tightly to it, with a door set upon hinges, made of a pane of glass, opening in the middle. When so large a Fernery is prepared, one can grow a great variety of Ferns, Mosses, and Lycopods in it, and can make tiny hanging baskets out of nut-shells or wicker-work, and grow slender delicate trailers in them, and also many lovely treasures of the wild woods. The height of a Fernery is important, and it should be made as high as is possible to keep the case well proportioned, because the Ferns and other plants require plenty of room in which to develop and expand their various beauties in a graceful manner. When the Fernery case is made, it is needful to fill it with soil, and you must be particular to select this with care. Common garden soil will not answer your purpose for a Fernery any more than for a hanging basket. If you have access to the woods, you can procure the best soil in the same place where you select the Ferns and Moss with which to fill the pan. But if this cannot be done, and you are forced to rely upon the florist to fill your plant case, let him also furnish the soil it requires. And in case both these suggestions fail you, make a compost of one part silver sand, one part loamy peat, and one part leaf-mould; or substitute powdered charcoal and cocoa-nut fibre for the peat and leaf mould. Place a few bits of charcoal in the bottom of the pan to keep it sweet. Water the soil thoroughly when the plants are first put in, and then close the Fernery, and place it in a shaded room for several days without opening it. If the soil is well watered when the plants are placed in it, it will not require any more water for months, but once in six weeks or two months it is well to give it a little fresh air by opening the door for half an hour or so. If any of the fronds of the Ferns turn brown, or the other plants decay, it is best to open the case and remove them, as they will taint the air. If the Fernery is made upon a table, castors should be placed on the legs, so that it can be easily moved, and thus it can be changed from one window to another. An eastern or western window suits it well, as it does not require but very little sun—yet needs light. Moisture is constantly condensed during the night, and it is deposited upon the glass sides. It is this condensation which makes Ferns flourish under the glass, when the dry atmosphere of our living rooms would destroy them. I will give exact directions for making a Fernery, that any carpenter can follow. Black Walnut, Oak, or Maple can be used. Dimensions, 3 feet by 2, and 2 feet in height. Size of glass, 22 inches by 22 for the ends, and 34 by 22 for the sides and top. The bottom board should be 38 by 26; should be made of inch-and-a-half plank, and project an inch beyond the sides. The sides should be of inch stuff, and grooved to let in the glass panes, which should be fastened in with putty. Many like a pitched roof, which will add to the height, and can be shaped with panes of glass to resemble a French roof house. A pretty moulding can be fastened around the outside, which will be ornamental, and also serve to conceal the zinc pan, which is placed inside. A little door must be made in the back of the Fernery, by which plants can be removed or added, and air and water given when needful. A glass case can also be fitted over a marble or iron vase, filled with plants, and a very pretty Fernery made with little trouble.—*The Albany Cultivator*.

Hardy Climbers for the Balcony.—*Cobaea scandens* is a nearly hardy creeper, and very useful for window gardening, as it grows and flowers freely, planted in a window box and trained either up the railings of the balcony or up strings or wires placed for the purpose. Cuttings taken off old plants root freely if plunged in a gentle bottom-heat in the spring, and, if grown on freely and gradually hardened off about the latter end of May, they may be planted out with impunity, and will go on flowering all the summer. *Eccremocarpus scaber* may be treated in the same way, but the best plan to adopt with this is to sow the seed in the autumn, and to keep the young plants in a sunny corner all winter ready to plant out in the spring. *Tropaeolum peregrinum* is a fine yellow-flowered trailer, easily raised from seed in the spring, while for a fresh green-leaved trailer none equals the Virginian Creeper or the Australian Kangaroo Vine (*Cissus antarctica*), both of which do well in an ordinary window box if liberally supplied with water.

A GENTLEMAN from Ohio informs the *American Agriculturist* that there is on the farm of Mr. George W. King at Painesville, Ohio, a *Sassafras* tree which 1 foot from the ground measures 10 feet 4 inches in circumference, and 4 feet from the ground 8 feet 10 inches. It is 120 feet high, presenting a clean trunk of 50 feet to the lower branches.

GARDEN DESTROYERS.

THRIPS HÆMORRHOIDALIS.

EVERY gardener knows the thrips. It is a tribe of insects of an anomalous character, which has been erected into a separate order by Halliday under the name of Thysanoptera—an arrangement generally acquiesced in. Its most remarkable character is its mouth, which is placed between the anterior thighs. It has broad mandibles, and injures the plants it attacks by biting the leaves. All the species of thrips live upon plants, and they are so numerous in individuals that in the sun it is often not easy to find a flower without a number of these little black elongated motes creeping among the petals. The larvæ are pale yellowish or reddish, and inhabit the same place as the perfect insects, and in their company. They differ, farther, from the latter only in not having wings and antennæ. They have the same habit as the Staphylinidæ of raising their tails as if to defend themselves. The pupæ have imperfect wings. The perfect insect is black or dark brown, and its wings are furnished with a broad fringe. The species are said to be numerous. The present species is supposed to be exotic, and to have been introduced with foreign plants. It lives in our hothouses and conservatories, and feeds upon almost every plant in the place. In the conservatory Azaleas suffer particularly from them. In the hothouse Palms, Ferns, Bignonias, Euphorbias, Aralias, and especially Orchids, suffer most. The leaves of the bitten plants become marked with white, yellow, or, in the case of Orchids, with black blotches, sometimes covering and disfiguring the whole leaf, as shown in the accompanying woodcut. By-and-bye the leaves shrink or become flaccid, as if burnt at their tips, and then fall off. The Orchids which they prefer, or which suffer most from them, are the Phalænopsis, Cattleyas, Lælias, Dendrobiums, Aërides, Saccolabiums, &c. The insects keep for the most part on the under side of the leaves, and on the young shoots. The female lays her eggs usually along the margin of the mid-rib. The eggs are microscopically small, longish, round, and whitish. The larva is hatched in eight or ten days. It changes its skin four times. At the third change the rudiments of wings begin to appear; it takes about three weeks to reach its full development. Fumigation with tobacco is the most approved remedy. It kills the perfect insect and the larvæ, but has no effect upon the eggs. Hence the process requires frequent repetition—say once a fortnight until the breed is exterminated. It is unnecessary to tell the gardener that this remedy must be used with caution, and not applied indiscriminately to all plants. Orchids suffer much from it, so do the Gesneriaceæ, and most Ferns. Cinerarias and Heliotropes do not like it. In such cases, sulphur in powder applied with the fingers to the moist leaves, or, still better, Gishurst's Compound, have been found effectual.



Orchid-leaf attacked by thrips.

A. M.

Paris Green.—Paris green is a compound of arsenic and copper. It is either identical with the pigment known as Scheele's green in the arts, or is very similar to it. It consists of oxide of copper 28.51, and of arsenious acid 71.46 per cent; thus being a most virulent poison. The green pigment, which consists of sulphate of copper, alum, and ammonia, or of other combinations of copper, lime, &c., is known as Brunswick green. This compound is not so poisonous as the Paris green. Some years ago Paris green was used to colour confectionery in the city of Paris, but this being detected by the "Council of Health," its use for such purposes was prohibited. It is much used in America in the destruction of insects.

THE KITCHEN GARDEN.

SAGE.

THIS pleasing-looking under-shrub, a native of the south of Europe, is always an inmate of the herb garden. It is very vigorous, and will grow anywhere; but we have seen it perish on the London clay, and it, of course, does best on a warm and well-drained soil. As it is apt to get too straggling when kept too long in one spot without being transplanted, the best way is to replant every third or fourth year; and should the plants ever be cut off in winter, a tuft on some dry bank would most probably survive and furnish any amount of cuttings. Where but a small supply is required, a tuft or two on the margin of a clump of shrubs would suffice. The slips may be readily struck in a shady border under a handlight, or on an old or gentle hotbed. It may also be freely raised from seed; but that means is not often resorted to, as cuttings strike readily, and are more quickly raised than seedlings. There are several varieties—the red, green, narrow-leaved green or Sage of virtue, and broad-leaved green or balsam Sage. The leaves of these varieties present various shades of colour, and there is also a handsome variegated variety, cultivated for ornament only. I always practised every April pegging down and layering the outside and lowest branches, and thus always had a stock of young plants in hand for planting the next and every succeeding April. Often the severe frost would kill all the centre of the old plants, while the young layers were safe and sound, and the whole of those plants not layered would very often be killed.

JAMES BARNES.

A FEW WORDS ABOUT BEANS.

OUR earliest out of door Beans are the longpod and broad Windsor section, simply because being perfectly hardy they can be sown at almost any period of the winter, but as a rule they are not so useful as the dwarf or thinner Beans, as these latter, when properly cooked, constitute quite a vegetable delicacy, little inferior to a good dish of Peas. Broad Beans for the tables of the rich are generally used whilst very young, and for obtaining them in such a stage of growth, and yet of good size, no sort is better than Johnson's Wonderful—a kind that is also known as Mackie's Monarch—and which is, without doubt, the finest broad Bean for all purposes ever sent out. I especially commend it to cottagers as a splendid cropper, and where the soil is good it will produce fine pods from 7 inches to 8 inches in length, full of Beans that cannot be excelled in quality. It is singular that in spite of the existence of this grand Bean, our market gardeners seldom grow it, being chiefly attached to the broad Windsor, a circumstance probably arising from the fact that the latter is best known in the market, and that it takes many years to change the popular taste in favour of some new comer. The broad Windsor, at its best, seldom produces more than three Beans in a pod; but, of course, they are very large. I once knew a lady who would have only broad Windsons grown, and she used to have them served up to table after they were old, and would admit of the skins being removed without breaking the mealy inside; thus used, these old Beans are exceedingly nice, and in that state only. Eclipse is a fine runner Bean, a tall kind, having very long straight pods, that are tender and nice. The dry seed is light brown in colour, and striped with purple; it is flat and small. The Premier Runner is a kind which I have grown for several years, and which is in reality a superior dwarf kind broken into a runner. It grows to a height of from 5 to 6 feet, and is a most profuse bearer, the pods, when cooked, being exceedingly tender. One sowing of this Bean in good holding-ground, and, properly staked, will furnish such a continuous supply that the necessity for making frequent sowings of dwarf kinds is quite done away with. The seed has a reddish ground, thickly covered with dark specks. The very finest runner I have ever seen belongs to the white Dutch section, or what is in reality the white form of the old scarlet runner. I selected it last year, and have grown it again this season, and find that it maintains its character perfectly. Mr. Barron, of Chiswick, saw it growing here a few weeks ago, and he then declared it to be the finest Bean he had seen. He mentioned a fact in relation to the white and scarlet runners that is not generally known, namely, that Continental seed produces a more luxuriant bine and less fruit than home-grown seed, a point worth attention. The Negro, though occasionally apt to run, is one of the very finest and best of late Beans, and yields a large crop. I hear that a first-class certificate has been recently granted to a fine-podded kind, known as Cutbush's Grand, but which is in

reality a good selection of the old red Flageolet. The ripe seed is long and kidney-shaped, and of a rich mulberry colour; closely resembling this is Sutton's new Bean, Canadian Wonder, the seed of which, however, is rather lighter in colour and the plant rather later than Flageolet. Another kind that is highly spoken of is Osborn's new French Bean, which is, however, considered by some to be but an old friend under a new name, and others think that as a forcer it neither beats Sion House, Fulmer's Early, or Newington Wonder. Another new distinct and certainly first-rate early Bean is the new Salmon Mexican—a salmon-coloured Bean that is, undoubtedly, as good of its class as any variety with which I am acquainted. There is amongst private gardeners and market gardeners considerable difference of opinion as to what constitutes a really useful dwarf Bean, the gardener invariably liking a Bean that will furnish a continuous daily supply for a long time, whilst the market-grower desires a sort that will yield one or two large simultaneous gatherings, and then can be pulled off to make room for another crop. There are a few kinds that have this latter feature specially developed, but as gardeners generally like a constant supply they will speedily find, upon trial, what particular kind suits them best in this respect.—A. D. B., in *"The Gardeners' Record."*

WINTER LETTUCE.

THOSE who have a frame or hand-lights to spare, and wish to have nice tender Lettuce in early winter, and later, should now fill them with plants. This advice is most applicable to those who live in cold localities, or where early frosts arrest a late autumn growth. For the earliest winter Lettuce I always prepare a frame early in September. I use no bottom heat in the way of leaves or anything else; there is still enough of sun and warmth to promote a luxuriant growth, with the occasional assistance of glass, to produce fine plump Lettuce by the beginning of winter that will keep for a long while in a standstill but excellent condition, in a dry frame. Prepare a bed of good light rich soil in the frame, such as refuse potting-soil, or anything of that kind. Let the surface of the bed be within 1 foot of the glass, and when ready plant with young plants of Hardy Green or Hammersmith; and for first use, Paris White Cos. If there is likely to be a scarcity outdoors in late autumn, place 4 inches apart, and the same distance between the rows, and use every alternate row first, and afterwards every alternate plant in the rows left. This leaves the main crop of plants 8 inches apart each way, which will be sufficient for their development. They will require watering and other attentions till they are full grown. This will be in November or early in December; and, after this, the object ought to be to keep the plants—not to grow them. To do this the frame should be kept dry and cool by lifting off the lights in favourable weather, and putting them on in wet weather. Only keep all still and dry, and a well-filled frame of compact Lettuces will be the reward. A plan, only second to this, is to lift full-grown plants from the open ground in October or November with balls, and set them together in a dry shed, filling up the spaces between the balls with rather dry soil. They will keep a long time this way.—J. S., in *"The Field."*

French Short-horn Carrot.—This Carrot, of which we see so many brought from France into Covent Garden Market in the early part of the season, is easy of cultivation, and better suited to some soils than those generally grown in this country. Carrots in a young state are at all times of the year in great request; and this one, when full grown, from its shape, and from its being of finer texture and flavour, is much preferred to any of the others for ornamental cookery. I procured last season some seed of it, which I have found to be both true to its kind and of excellent quality. I find it likewise to grow much faster than the common Horn Carrot. To prove this I sowed last year, on the 15th August, on a well-prepared piece of ground, two beds, one of each sort, side by side; they vegetated and came up as nearly as possible at one time; but I found, in the beginning of November, that the French Horn was, on an average of the crop, nearly double the size of the other. Upon the soil in this neighbourhood the sorts of Carrot commonly grown are very subject to canker-worm—so much so that they frequently prove a failure; but the one in question has entirely escaped, and has done in every way remarkably well.—J. S., *Rockampton.*

Leek Culture in Flanders.—In the Walloon district of Flanders, says M. E. André, the following mode of planting Leeks is generally practised. —With a long dibber a hole is made as deep as the length of the young plant, which is then inserted into it, so that merely the tops of the leaves appear above ground. The hole is not closed up by pressing the dibber at the side, nor is any soil filled in to it, as sufficient is washed down to the roots in the course of watering. The result is the production of white and tender stalks, equal in length to the depth of the hole. This is a very old and well-known method in Scotland.

WORK FOR THE WEEK.

THE FLOWER GARDEN.

Bedding Plants.—Pick off all decaying flowers and seed-pods, and remove flower-spikes from variegated-leaved plants, with the exception of Pelargoniums, so as to preserve the symmetry of the plants and maintain effective variegation of the leaves. Give plenty of water to the plants during afternoons in dry weather, and stake any plants requiring that attention. Where Gladioli have been planted, either in lines or otherwise, amongst other plants, cut off the spikes as soon as the blooms have faded; but preserve the leaves intact. Treat Hollyhocks in the same manner; and, if necessary, they may be cut down to the ground as soon as they have done blooming, and the young shoots that will afterwards emerge from the root may be employed for purposes of propagation. Peg down all trailing plants, and lead them over the sides of baskets and vases. *Coprosma Baueriana variegata* looks very pretty pegged to the ground, and when the naked shoots are covered with soil, leaving only the tops above the surface. The main stock of cuttings of the various bedding plants should now be put in; but, should the quantity be insufficient, propagation may be continued until the 1st of October; but after the 1st of September, unless in exceptionally fine seasons, a very gentle heat may be required. This may be obtained from a frame placed over a layer of leaves a foot in depth, or by having a hot-water pipe running through the frame; but where any moderately warm pit or greenhouse can be spared, nothing else is necessary for ordinary plants. Verbenas and Pelargoniums from early-struck batches, and that are now well rooted, should be transplanted into boxes, in which they will have to remain until spring. Some of the variegated-leaved Pelargoniums should be potted singly, for it is necessary to have them strong before the approach of winter. Propagate *Ageratum* and *Salvia* now from side shoots, and insert the cuttings about 2 inches apart in boxes filled with loam, leaf-soil, and sand in about equal proportions. Towards the end of the month strike some cuttings of *Gazania* under similar circumstances. Cuttings of the finer sorts of *Petunias* may be saved, but as they come so well from seed sown in spring, it is almost needless to occupy space with them in winter. *Coleuses*, *Iresines*, *Lantanas*, &c., must be struck in heat, but plants of the last two which have been kept in pots throughout the summer make the best stove plants. *Echeverias* and succulents in general may now be raised from seed sown in sandy soil in a pit, and pricked off as they require it; or they may be increased by means of leaves and ordinary cuttings. By increasing the stock of these in August and September, good plants can be obtained for planting out next year. The many off-sets that appear around the necks of *Sempervivums* may be thinned out for the same purpose, and got well established before the approach of winter.

Sub-tropical Plants.—These will now be at their best, and looking magnificently, set off, as they generally are, by a basement either of brightly-coloured leaves or bloom. As isolated specimens, judiciously studded on lawns and in rocks, fine-leaved plants, such as *Wigandias*, *Ferdinandias*, *Udeas*, *Castor Oil* plants, *Acacias*, and many others produce a grand appearance. *Cannas* are now finely in bloom, and the gigantic, but hardy, herbaceous *Polygonum Sieboldii* is also now laden with flowers, as are likewise hardy *Hibiscuses* of various kinds. Among smaller plants now in flower *Vallota purpurea* is one of the finest, and it is admirably suited for the front of moderately-sized flower-beds. *Erythras* now form conspicuous objects, being in full bloom, and the variegated Japanese Maize, now in flower, has a most effective and relieving appearance. Propagate *Coprosma Baueriana variegata* from the half-ripened shoots, by inserting them thickly under hand-lights in a close or very gently heated frame or pit. *Coleuses*, too, must be increased according to demand, and *Alternantheras* if required; but stove plants kept in pots in a cold frame, throughout the summer and autumn months, make the best stock plants, and they winter better than younger ones. Increase the stock of *Ficus* from cuttings in heat, *Palms* from seed, *Musas* from seeds and suckers, &c., but such annuals as *Tobacco plants*, *Wigandias*, and others may be left unsown until early in spring.

Calceolarias.—Towards the end of the month frames must be got in readiness for the winter stock of these, no matter whether it be cuttings or old plants that are to be saved. These frames may either be made of wood or turf, and they must be set upon a well-drained bottom covered, a few inches deep, with ashes. Over this put 6 or 7 inches in depth of sandy loam, mixed with a little leaf-soil, and on the surface place half an inch layer of pure sand, beating all pretty firmly. No heating material whatever will be necessary in winter, covering the sashes with some protecting material being sufficient. In the last fortnight of the present month and during any part of October the cuttings may be successfully put

in, about 2 inches apart, and shaded for a little time afterwards. Short stubby laterals should be chosen for propagating purposes, and all should be rejected that have visible flower-buds. Dustings with dry wood-ashes now and then is a good preventive of the Calceolaria disease or damp that often proves so destructive to them. Such varieties should be most extensively increased that thrive best in the locality; as, for instance, *Aurea floribunda* does not do well near London, whilst in many other parts of England and Scotland it is the best of all Calceolarias. *Gaines's Yellow* is the sort most cultivated about London, and *amplexicaulis*, too, does even better than it, but its habit is so loose that we want, for general purposes, a variety having a stocky habit, and, if possible, the blooms of *amplexicaulis*. *Princess Helena*, a dark variety, does remarkably well in Lancashire. *Ambassador*, *canariensis*, *Prince of Orange*, *Aurantia multiflora*, *Havelock*, and *Golden Gem*, are also good varieties for the flower-garden.

Hardy Herbaceous Plants.—The number of these in flower is weekly becoming less; but, by a little forethought, a considerable amount of bloom might still be maintained. For instance, if a few *Delphiniums*, double-flowered *Pyrethrums*, *Antirrhinums*, *Pentstemons*, and *Phloxes* were cut back very early, they would send up fresh shoots that would now be in full bloom; whilst those permitted to go on in their natural course will have had their decayed flower-stems removed some time ago, with the exception of the *Phloxes*, which may still be in fair condition. Herbaceous *Asters* will now rank amongst the chief features of the herbaceous or mixed border, especially such varieties as *Amellus*, *linarifolius*, *versicolor*, *sagittæ-folius*, *punctatus*, *Shortii*, *rigidus*, *discolor*, *hyssopifolius*, and others. They should be strongly staked to prevent breakage by wind. The two varieties of the double-flowered *Helianthus multiflorus* are perhaps the most showy of herbaceous plants at present, and fit companions for them are the *Rudbeckias Neumannii*, *columnaris*, *speciosa*, and *purpurea grandiflora*, which are all grand, showy, and free-blooming hardy autumn flowers. *Arundo conspicua*, too, is a fine object, either in the form of isolated specimens on lawns or in borders, and will soon be followed by the more stately *Pampas Grass*, which should receive occasional thorough soakings of water. The *Eupatorium purpureum* will be in full bloom in the latter part of the month, and looks well planted near ornamental waters, and *Solidago mexicana* and *arguta* will now be beautifully in bloom in our shrubby borders, and in back lines in herbaceous borders. The hardy *Fuchsias* are, perhaps, the most attractive of September plants, and *Veronica salicifolia*, too, is another plant now in great beauty, as is also the *Tritoma Uvaria*. Amongst the smaller plants that bloom in September may be mentioned *Sisyrinchium convolutum*, a pretty little yellow flower; *Vittadinia triloba*, a Daisy-like blossom, with the good property of keeping long in bloom; *Corydalis capnoides alba*, an interesting white form; the little yellow *Achillea Ageratum*, *Statice* of various sorts, *Linaria alpina*, *Lythrum floccosum* and *L. alatum*, *Anemone japonica*, white and rose; *Japan Lilies*, *Erodium macradenum*, *Machæranthera glabra*, *Bupththalmum maritimum*, *Zapania nodiflora*, *Sedum spectabile*, and *S. Telephium*, *Asclepias tuberosa*, *Cyclamen hederacifolium*, and many *Violas*, annuals, and autumn-blooming bulbous plants. Cut over all decayed and decaying flower spikes, and remove withered leaves, so as to preserve neatness and cleanliness. Any specimens that have bloomed early, and that have completed their growth, may now be lifted, divided, and re-planted as soon as possible in a rich well-prepared and deeply-worked soil. Propagation of herbaceous plants from cuttings should cease after the first of next month, otherwise the cuttings will be insufficiently rooted and too weak to stand the winter well. Alpines and other plants in pots should now be looked over, cleaned, re-potted, and placed in cold frames. Transplant *Iris* of sorts, and thin the blooms of choice *Chrysanthemums*.

The "Horse-gowan."—Your correspondent "*Leontodon*" (p. 192) thinks I have "fallen into an error" as to the Ox-eye Daisy being called in Scotland the Horse-gowan, and inquires in what part of the country that name is applied to it. The fact was communicated to me twenty-five years ago by a friend long since gone. One day, when we were examining the exquisitely symmetrical arrangement of the unexpanded disk-florets of the Ox-eye, which exactly anticipates the "engine-turning" on the back of a watch, he remarked, "These we call in Scotland Horse-gowans." My friend came from Dunfermline, and his remark may have applied only to his own neighbourhood. The dictionaries all appear to consider the Daisy to be the Gowan, and popular feeling accepts no other in the sweet allusion in "*Auld Lang Syne*." Gowan, then, being obviously the little or common field Daisy, it seems but reasonable that Horse-gowan should denote the big or Ox-eye Daisy.—LEO. GRINDON.

THE GOLDEN-SPURRED COLUMBINE.

(*AQUILEGIA CHRYSANTHA*.)

MORE than twenty years ago, the writer in his wanderings in the wilds of Northern Mexico, came across a Columbine, which at the time seemed to him not only the most beautiful Columbine, but the most charming wild flower he had ever seen. How he searched for seeds—for, being a thousand miles from anywhere, roots were of no use—how sadly he contented himself with specimens for the herbarium, and how he filled his hat-band and the button-holes of a red flannel shirt with flowers, are matters of pleasant recollection. He supposed, of course, he had a new species, and was not a little disappointed to find that both Torrey and Gray considered it as a yellow variety of *Aquilegia leptocera*—what is now known and cultivated as *Aquilegia cærulea* (the Rocky Mountain Columbine). As the plant is destined to be a popular one, we give it the name of "Golden-Spurred Columbine." That most industrious collector and excellent botanist, Dr. C. C. Parry, was fortunate enough to obtain seeds of it, and the plant has been for some time in cultivation in the Botanic Garden of Harvard University. It has been sparingly introduced from there into European and a few American gardens, and it is noticed in foreign journals with high commendation as *Aquilegia leptocera flava*. This is not the place to discuss botanical nomenclature and synonyms. Suffice it to say, that, after cultivating the plant for several years, and comparing it with the Rocky Mountain Columbine (*A. cærulea*), Dr. Gray has concluded to describe it as a new species, *Aquilegia chrysantha*. The botanical distinctions between this and *A. cærulea* are not very marked, but it is one of those cases in which other than purely botanical characters may have weight. The plant comes from a different geographical range, grows taller, flowers nearly a month later, and blooms for two months continuously; these peculiarities, added to its full yellow colour, seem to warrant it to rank as a species. Like the Rocky Mountain Columbine, it has a very long and slender spur, often over 2 inches in length. It is perfectly hardy, even more so than the Rocky Mountain species, which, in some soils, being injured by the heat of summer, is not sufficiently strong to stand the winter, a difficulty, however, which has never been within our experience. We learn that seeds of this plant will be offered by some of our leading seed-dealers this autumn. [We are indebted to the *American Agriculturist* for the above interesting history of this fine plant, to which we several times alluded during the summer.]

TRIALS OF PELARGONIUMS AT CHISWICK.

The following is a complete list of the Pelargoniums which have received * * * each (equivalent to a first-class certificate) at the Chiswick trials, 1873:—

Golden Tricolors.—Beautiful for Ever, Colonel Lloyd Lindsay, Countess of Enniskillen, Madonna, Oriental, 355, 367, E. G. Henderson.

Silver Tricolors.—Circassian Beauty, J. Hodgson; Fair Rosamond, Lass o' Gowrie, E. G. Henderson and Son.

Golden Margined.—Golden Brilliantissima, J. Gibson.

White Variegated.—Laura, E. Bland.

Bronze-leaved.—Crown Prince, G. Acton; Emperor of Brazil, Downie, Laird, and Laing; Freelight, Carter and Co.; Golden Harry Hieover, E. G. Henderson and Son; Mrs. Elliott, Downie, Laird, and Laing; Reine Victoria, E. G. Henderson and Son.

Pink-flowered.—Amaranth, J. R. Pearson; Bella, Carter and Co.; Cleopatra, — Barrett; Evans' Seedling, — Evans; Mrs. Halliburton, E. Bland; Welbeck Nosegay, W. Tillery.

Scarlet Zonals.—Begere, Downie, Laird, and Laing; Don Giovanni, William Paul; Dr. Livingstone, Carter and Co.

Cerise and Scarlet Nosegays.—Chunder Sen, E. G. Henderson and Son; Forest Hill Nosegay, Downie, Laird, and Laing.

A Fair Flower Show.—A flower show, consisting of the Virginææ was held yesterday in the Assembly Rooms, at Missington. Prizes were awarded to the parental exhibitors of several uncommonly beautiful specimens, and others were highly commended. The winners of gold and silver medals included an *Angusta formosa*, an *Arabella auricomma*, an *Amelia elegans*, an *Agnes gracilis*, a *Barbara subfusca*, a *Carolina rosea*, a *Dorothea boëpis*, an *Emma speciosa*, a *Frances callisphyra*, and a *Georgiana glauca*. Many others were highly commended: in particular the *Henrietta canora*, and *Isabella saltatrix*. Attention was attracted by the *Julia ridens*, the *Katharina procax*, the *Louisa languens*, the *Maria garrula*, and the *Nora loquacissima*. Among some specimens of a typical character, less distinguished by their beauty than by other peculiarities, the most remarkable were the *Olivia rotunda*, the *Priscilla pinguis*, the *Rosa androdes*, the *Rebecca acuta*, and the *Selma simplex*. The exhibition comprised a magnificent specimen of the *Dorcas carota*, and an equally splendid one of the *Jemima vulgaris*.—*Punch*.

SOCIETIES, EXHIBITIONS, &c.

THE MANCHESTER EXHIBITION.

(Continued from p. 204.)

VEGETABLES occupied a large tent by themselves, the monotony of its contents being relieved by the presence of fruit trees in pots and stove and greenhouse plants arranged along the centre of the middle tables.

Collections of Vegetables.—In this class the first prize, £12, was awarded to Mr. John Holder, Cheltenham, for a marvellously fine collection, consisting of forty-five dishes. It contained several sorts of Vegetable Marrows, Onions, Garlic, Red and ordinary Cabbages, Brussels Sprouts, Savoys, Cauliflower, Spinach, Turnips, Leeks, Parsnips, Beet, Salsafy, Celery, Tomatoes, Cucumbers, Chillies, Peas, French and Broad Beans, Scarlet Runners, Mushrooms, Horse Radish, Rat-tailed Radish, and several varieties of Potatoes. Mr. John Turk, Railway Cottage, was second, and Mr. Gilbert, Burghley, third. For fifteen varieties of vegetables, Mr. G. Miles was first with Leicester Red Celery, Veitch's Autumn Giant Cauliflower, Yellow Malta Turnips, Vegetable Marrows, Tomatoes, Early White Naples Onions, Long Red Surrey Carrots, Globe Artichokes, Student Parsnip, Cucumbers, &c. Mr. J. Holder was second, and Messrs. Copeland and Doran, Stretford, third. For ten varieties of vegetables, Messrs. J. Snowdon and Sons, Thirsk, were first, Mr. J. Holder second, and Messrs. Copeland and Doran third. For six varieties, Mr. G. Miles was first, Mr. Giles Bloxham second, and Mr. W. Skinner, Cheltenham, third.

Cauliflowers, Cabbages, &c.—For two heads of Cauliflowers, Mr. J. Hunter was first with superb heads of Veitch's Autumn Giant; Mr. G. B. Tillyard was second; and Mr. G. Smith, St. Helens, third. Most of the Cabbages were of the large kinds, better fitted for agricultural purposes than for garden work. For two heads of the White Cabbage, Mr. A. Fallows, Stretford, was first; Mr. Wm. Cragg, Wimperley, second; and Mr. Skinner third. The Red Cabbages had large and firm hearts, and preference was given to the darkest-leaved kinds. Mr. Cragg was first, with very solid heads; Mr. R. S. Yates, Sale, second; and Mr. E. Smith, Cheltenham, third. The Savoys, like the Cabbages, were very large, and mostly of the Drumhead sort; indeed, size seemed to have greater weight than quality. For two Savoys Mr. Rylance was first, Mr. A. Fallows second, and H. C. Wilson, Esq., Prestwich, third.

Onions and Leeks.—These were invariably good, the Onions being large and solid, though not ripe, and the competition was very keen, no fewer than forty-nine lots being present in the class of a dozen bulbs of spring-sown Onions. Mr. J. Pestrige, Chipping Norton, was first with Onions about 4 inches in diameter, Mr. J. Walker, Thame, being second, and Mr. J. Lakin, Chipping Norton, third. For twelve Tripoli Onions, Mr. Skinner was first, Mr. Biddle, Loughborough, second, and Mr. G. Miles, third. The Leeks were of prodigious size, some of them having clear necks about 2 inches in diameter, and from 6 to 9 inches long. Mr. Wilson, Hawick, was first with half-a-dozen heads, Mr. H. Biddle, Loughborough, second, and Mr. R. Galasher, Renfrew, third.

Turnips, Carrots, and Beet.—The Turnips consisted of good usable roots of several white and yellow sorts, and were unexceptionally solid. For a dozen roots, Mr. Fallows was first, Mr. Woodier, second, and Mr. Cragg, third. The Carrots were clean, of medium size, and included several sorts of Horn and Long Red kinds. For a dozen Carrots, Mr. E. Smith was first, Mr. Turk, second, and Mr. Skinner, third. Beet was pretty good, especially that from Mr. Griffin, who was first, Mr. Turk was second, and Mr. Skinner, third.

Peas and Beans.—For twenty-four pods of Peas, Mr. J. Barrow, Lynn, was first, with *Ne Plus Ultra*; Mr. H. Simcock, Barton Moss, was second; and Mr. Bradley third, with *Ne Plus Ultra*. The Pods of the French Beans were long and fine, and just fit for use. Mr. D. Lumsden, Sleaford, was first, with *Pooley's Wonder*, the pods of which were about 6 inches long and somewhat narrow; Mr. Turk was second; and Mr. T. Byrne, Old Trafford, third. The Scarlet Runners were also of excellent quality, the pods being large and fleshy. For twenty-four pods of Scarlet Runners, Mr. W. Clark, Loughborough, was first; Mr. E. Smith, second; and T. H. McConnell, Esq., Congleton, third.

Cucumbers and Vegetable Marrows.—Cucumbers consisted of all the leading sorts and a great many unnamed seedlings, and not only were they well represented in the classes devoted to them, but they were lavishly supplied amongst the collections of vegetables. For a brace of Cucumbers, Mr. Fallow was first with a fine long white-spined seedling, Mr. Heywood was second with another white-spined seedling, and Messrs. Munro & Wilkinson, Potter's Bar, third with Duke of Edinburgh, an excellent medium-sized sort with no "neck." The Vegetable Marrows presented no great variety; Moore's Cream being apparently the most favoured sort. Mr. J. Barrow was first for two, Mr. E. Smith second, and Mr. Copeland and Doran third. Examples were exhibited of a Hong Kong Cucumber that were grown at Woodhill, Prestwich, from seeds introduced by W. Langton, Esq., Litchford Hall. The fruits are a little darker in colour than the Vegetable Marrow, between 2 and 3 feet in length, 4 inches or so in thickness, cylindrical in form, and very blunt at both ends, where it is also a little thicker than it is in the middle of the fruit. Mr. Manderson of the Alexandra Park, likewise exhibited fruits of the same, grown from seeds presented by F. C. Edge, Esq., Bowdon. The fruits have anything but an enticing culinary appearance.

Lettuces and Celery.—The Lettuces presented nothing very striking, either in quality or variety. Mr. Leppoc, Higher Broughton, was first with a brace of Cos sorts; Mr. Simcock was second, and Mr.

Skinner third. Celery was generally good, and the heads large. Yates's Incomparable, Wright's Grove White, the Manchester Red and White, Cole's and Williams' varieties, and many seedlings, saved by the exhibitors, were the principal kinds that were shown. For three heads of the red sorts Mr. Smith was first, Mr. Simcock was second, Mr. Gilbert third, and Mr. H. Beard fourth. For the same quantity of the White Celery Mr. J. Smith was first, Mr. J. Holder second, G. Tillyard third, and Mr. Simcock fourth.

Potatoes.—A small marque was almost entirely devoted to collections of Potatoes, which were, taken as a whole, as fine an exhibition of this esculent as has perhaps ever been seen. For twenty-four varieties, Mr. D. Lumsden, Sleaford, was first with Callas, Millard, Carter's Main Crop, Red-skinned Flour-ball, Early Rose, King of the Earlies, Dorrington Hero, Veitch's Improved Ashleaf, Sandringham Kidney, Carter's Ashtop Flake, Jackson's Seedling, Peerless, Milky White, Birmingham Prize-taker, Paxton's Wonder, Paterson's Victoria, Prince Teck, Early Dykeman, Bresser's Prolific, Dunbar Regent, Climax, and The Bloomer. Mr. P. Mackinlay was second, and Mr. R. Dean third. In the class of twelve varieties of Potatoes, Mr. R. Dean, Ealing, was first with beautiful samples of Woodstock Kidney, Rector of Woodstock, English Rose, Onwards, Union, Birmingham Blue, Bountiful, Perfection Kidney, Red Emperor, Excelsior Kidney, Early White Kidney, and Early Gem. Mr. Mackinlay was second, and Mr. Biddle third.

No foreign society took advantage of the classes set apart for the exhibition of fruits and vegetables by horticultural societies, nor did our home societies respond as might have been expected. The Loughborough and the Cheltenham and Gloucester Societies were the only competitors, the former showing both fruits and vegetables, and obtaining in each case the gold medal or first prize; the latter showed only vegetables.

Stove and Greenhouse Plants.—Some huge specimens of these were supplied by Messrs. E. Cole and Son, in competition for the prizes offered in the class of twelve—six to be flowering, and the other six remarkable for their foliage. They consisted chiefly of *Cocos Weddelliana*, *Cycas revoluta*, *Gleichenia flabellata*, *Crotons*, *Allamandas*, and *Dipladenias*. *Fuchsias* of fair size were also shown. Agaves were shown by Mr. Peacock (Hammersmith), Mr. Williams, and Mr. Shaw. Mr. Peacock was also first in the class of fifty succulents, with a magnificent group of curiously-grafted, well-grown, and healthy specimens of *Echinopsis*, *Echinocacti*, *Pilocereus*, *Mamillarias*, Agaves, &c.; Mons. Pfersdorff, of Paris, being second, and Mr. Shaw third. Messrs. Jackson and Son, Woking, showed some fine specimens of autumn-blooming Clematises, grown in tubs and trained on trellises. For eight greenhouse Yuccas Mr. Shaw, Bowdon, was first with five plants of *abopisica*, *tricolor pendula*, *filamentosa variegata*, *quadricolor*, *Draconis*, *Stokesi*, *canaliculata*, and *Aloifolia variegata*; Mr. Williams was second, and Mr. Peacock third.

New Plants.—In the class for the best half-dozen new plants, in or out of flower, introduced into Europe by the exhibitor, and not found in commerce, Mr. William Bull, of Chelsea, was first, with excellent specimens of most beautiful and valuable plants. They consisted of *Croton spirale*, one of the most distinct of its class; *C. majesticum*, a strong-growing, handsome, and highly-coloured sort; *Pritchardia grandis*, a Palm with entire vivid green leaves, very handsome, and distinct from all others; *Campsidium valdivianum*, an exquisite semi-scandent plant very suitable for covering a small trellis; *Bertolonia superbissima*, a gem amongst fine-leaved stove plants, being of moderately strong growth, and distinctly marked with little round rose-coloured spots; and a very fine *Dracena*, called *vitiensis*.

Dracenas, Palms, and Ferns.—In the class for half-a-dozen Dracenas, Mr. Wm. Bull was first with six as fine plants as we have ever seen exhibited, consisting of *Persea variegata*, *Shepherdii*, *Chelonii*, *Imperialis*, *Regina*, and *Fraseri*; Mr. S. Jennings, Shipton-on-Stour, was second; and Mr. Dixon third. For Ivies in pots, Messrs. Lane and Son were first with very fine specimens, trained in a pyramidal form for convenience of travelling; but for window boxes, screens, suspended baskets, or other ornamental purposes of that kind, a freer mode of growth, would be necessary. The varieties were *maculata*, *albo-lutescens*, *canariensis latifolia maculata*, *argentea rubra*, gold-blotched, *Himalaica*, *Caenwoodiana*, *argentea*, and *hibernica*. Messrs. Williams, Shaw, and Yates were the successful exhibitors of greenhouse Palms; and the first two gentlemen and Mr. Dixon took the awards for tree Ferns. British Ferns were contributed by Mr. Shuttleworth and by the Hon. Mrs. Howard, of Milnthorpe.

Plants for Table Decoration.—These were arranged in a line along the centre of one of the fruit tables. For the best half-dozen, Mr. W. Bull was first, with *Pandanus Veitchii*, *Croton majesticum*, *Cureuligo recurvata variegata*, *Dæmonorops palembanica*, *Latania aurea*, and *Reidia glaucescens*; Mr. B. S. Williams was second, with *Geonoma Sarapiiguense*, *Croton longifolium*, *Areca Verschaffeltii*, *Kentia australis*, *Dracena nigra-rubra*, and *Pandanus Veitchii*; Mr. John Shaw, of Bowden, Manchester, was third, with pretty little plants of *Dracena Mooreana*, *Guilfoylei*, and others already named.

Conifers and Hardy Evergreens.—Some excellent specimens of Conifers were contributed; Messrs. Barron and Sons, Derby, being first in the class of twelve, with the following mostly grown in tubs, viz., *Araucaria imbricata*, *Thuopsis dolabrata*, *Retinospora pisifera*, *R. obtusa*, *R. plumosa aurea*, *Arthrotaxus latifolia*, *A. selaginoides*, *Picea magnifica*, *P. princeps*, *P. bracteata*, *Cupressus Lawsoniana stricta*, *Biota orientalis elegantissima*. Mr. Young, Godalming, was second, and Mr. J. Shaw third. For a dozen hardy evergreen trees and shrubs, Messrs. Barron were again first, with *Berberis Wallichii*, *Taxus adpressa*, *Skimmia fragrantissima*, two sorts of *Retinospora*, and several kinds of

Hollies; Mr. G. Caldwell, Knutsford, and Mr. Young were the other successful exhibitors in this class. For twelve variegated Japanese plants, Messrs. Barron were also first, with *Eurya latifolia*, *Euonymus radicans* variegata, *E. japonica ovata aurea* variegata, *E. j. latifolia-albo* variegata, *Retinospora plumosa aurea*, *R. p. variegata*, *Thujaopsis dolabrata* variegata, *Acer polymorphum roseo-pectinatum*, *Aralia Sieboldii* variegata, *Juniperus japonica albo-variegata*, *Eleagnus japonica* variegata, *Osmanthus latifolius variegatus*, *O. ilicifolius nanus* variegata, and *Kadsura japonica* variegata. For a pair of Golden Yews, Mr. Hill, Stone, was first; Messrs. Barron second, and Messrs. G. and W. Yates third. For a pair of standard Hollies, Messrs. Lane and Son were first with finely variegated plants; Messrs. Barron being second, and Mr. Shaw third. Large Bay trees were exhibited by Mr. Williams, Mr. Perera, and Messrs. Lane.

Bouquets and Drawing-room and Window Floral Ornaments.—The bouquets were very neatly and tastefully made up, and of a convenient size for the hand. For a wedding bouquet, Mr. F. Perkins was first with an extremely pretty collection of white blooms, consisting chiefly of *Eucharis*, *Pancratiums*, *Spiraea japonica*, wired *Tuberose* flowers, *Bouvardias*, and others, mixed with the foliage of Oak-leaved *Pelargoniums* and the light airy fronds of *Adiantum cuneatum*. Mr. C. E. Turner was second with a bouquet, of which the variegated *Panicum* formed a chief constituent; Mr. R. S. Yates was third. In the class of three bouquets for balls, Mr. R. S. Yates was first with pretty little compositions, chiefly of *Stephanotis*, *Orchids*, *Tea Roses*, *Pancratiums*, pink *Pelargoniums*, *Spiraeas*, &c. Mr. C. E. Turner was second with bouquets, of which *Dipladenias*, *Stephanotis*, *Hoyas*, *Ixoras*, and *Eucharis*, formed the chief constituents; and Mr. J. Shaw, of Bowden, was third with very pretty bouquets, tastefully mixed with *Vallotas*, *Nerines*, and wired blooms of *Agapanthus umbellatus*. The dinner-table decorations, consisting only of suitable vases and other table pieces, were of the most tasteful and effective kind, March stands being predominant. For vases ornamented with flowers for the dinner-table, Mr. Yates was first, Mr. Cypher second, and Mr. Turner third. For a furnished flower stand for the drawing-room, Mr. Yates was also first. For a furnished plant-case for the drawing-room, Mous. Pfersdorff, Paris, was first, Messrs. Slack & Brownlow second, and Mr. Shuttleworth third.

Cut Flowers.—Among these *Dahlia* blooms predominated. Amongst white sorts Miss Henshaw, Julia Wyatt, and Flag of Truce were in fine condition; as were also Yellow Boy, J. N. Keynes, Toison d'Or, and Acme of Perfection amongst yellows. Amongst the finest of others there were, of dark kinds, T. Goodwin, Sir J. Smith, Chancellor, J. Standish, C. Backhouse, and High Sheriff; of lilacs, Baron Taunton, Criterion, Mrs. Boston, W. R. Laird, Rosebud, and Rosy Queen; and of fancy coloured sorts Fanny Stewart, Lady G. Herbert, Memorandum, Cremona, Mary Keynes, Mrs. Saunders, Monarch, Sparkler, and Prospero. The principal exhibitors of *Dahlias* were Messrs. Clark, Walker, Painter, Milner, Wood, Thomas Goodwin, and Rylance. The winning *Hollyhocks* were remarkably fine; indeed, those from Lord Hawke had a brilliancy and richness of colouring about them that at once set them in the foremost rank. Conspicuous amongst them were Vanguard, deep crimson; Midnight, almost black; Mauve Queen, rosy-mauve; and Oriflamme, a brilliant red. The *Gladioli* constituted a grand feature amongst cut flowers; and Messrs. Kelway and Sons, in addition to taking the first prize for twenty-four spikes, exhibited a great bank of blooms. Amongst the best were *Virgil*, *Meyerbeer*, *Horace Vernet*, *Xerxes*, *Proteus*, *Norma*, *Iphis*, *Vacuna*, *Legarvé*, *Helle*, and *Lady Bridport*. There was a class for *Stocks*, but the exhibits produced were of inferior merit. The *Asters*, however, were good, especially the quilled sorts, of which Mr. Jennings and Mr. Betteridge were the principal exhibitors. Mr. Dobbie, of Renfrew, showed French *Marigolds* in perfection; and the African sorts from Mr. Milner, Bradford, were extremely pretty. Cut blooms of *Phloxes*, and other herbaceous plants, were also shown; but the most important subjects amongst hardy flowers were *Roses*, of which Mr. Prince, of Oxford, was a successful exhibitor. His plants are all grafted on the seedling Briar stock, of which he exhibited several plants with their roots bare, in order to show the healthy union between stock and scion. In the class of eighteen bunches of cut flowers, Messrs. E. Cole and Sons were first, Miss Baines second, and Mr. Perkins third. Amongst the blooms exhibited in this class were the choicest treasures of the Orchard-house, stove, and conservatory; and most conspicuous of all was a bunch of flowers of *Musa coccinea* in Messrs. Coles' stand. Prizes were offered for *Verbena* blooms; but, probably owing to the wet season, they were neither bright nor large. In the class of cut blooms of twelve sorts of double *Pelargoniums*, Mr. F. Perkins was first with some trusses of most beautiful flowers, most of which had individual blooms as double as a *Rose*. Amongst them were *Madame Marie*, *Victor Lemoine*, *Andrew Henderson*, and *Wilhelm Pfitzer*. Mr. Laxton's new double-flowering *Pelargoniums*, which were exhibited by Messrs. W. and J. Brown, Stamford and Oakham, deserve special mention. They consisted of E. J. Lowe, with large compact trusses of very double flowers, the petals of which are scarlet on the upper side, and whitish-pink on the under side, thus giving the flowers a variegated appearance; *Anorua*, a large semi-double sort of a bright scarlet colour,—this will probably make a good bedding kind. The gem of all, however, was named *Jewel*, with large dense trusses of brilliant scarlet flowers, which are exceedingly double. Messrs. Veitch and Sons showed blooms of the beautiful *Dipladenia insignis*; Mr. Bull furnished flowers of *D. Brearleyana*; Messrs. Dickson and Co., Edinburgh, a collection of *Pansies* and bedding *Violas*; and Mr. Chadwick, of Dukinfield, blooms of *Carnations* and *Picotees*.

Miscellaneous Collections.—Under this head, Mr. B. S. Williams, of Upper Holloway, exhibited a large group of stove and greenhouse plants. Conspicuous amongst them were several extremely pretty *Anætochilus*, a fine specimen of *Paullinia thalictrifolia*, *Pandanus Veitchii*, *Terminalia elegans*, *Croton Weismannii* and irregular, *Geonoma Sarapiguense*, *Maranta Makoyana*, *Cocos Weddelliana*, *Adiantum Hendersonii*, *amabile*, and *Farleyense*, *Phormium Colensoi*, and specimens of the exquisite little alpine *Nertera depressa* loaded with berries. Mr. Bull also furnished a collection of new and rare plants, among which were *Dracaena Goldiana*, the zebra-leaved sort that has deservedly been so much eulogised of late; *Vriesia reticulata*, *Anthurium crystallinum*, *Dæmonorops perianthus*, *Gymnogramma decomposita*, and many others. A group of *Palms*, *Filmy* and other *Ferns*, *Dracænas*, *Agaves*, *Succulents*, *Euryas*, *Dasyliroids*, &c., was furnished by Mr. W. E. Dixon, Beverley; and Mr. Shaw, of Bowden, sent some excellent specimens of *Anætochili*. Messrs. J. & W. Birkenhead showed several fine *Ferns*, especially a specimen of *Cheilanthes elegans* 3½ feet through, and densely furnished with fronds; *Davallia Tyermannii*, a crested *Gymnogramma chrysophylla*, *Davallia tenuifolia stricta*, and others. Messrs. Cole & Son had four fine plants of *Yucca filamentosa* variegata. An extra prize was awarded to O. O. Wrigley, Esq., for a collection of *Ferns*; and a similar award was made to J. Rylands, Esq., Stretford, for a group of stove and greenhouse plants. One of the most striking objects in the exhibition was the large stand of Messrs. Dickson, Brown, and Tait, Manchester. It was well furnished with stove, greenhouse, and hardy plants, and also with fruits, especially a large variety of *Melons* and ornamental *Gourds*. Vegetables of many sorts were likewise exhibited by this firm, and also pots, vases, &c. The Rev. F. D. Horner, Kirkby, Ripon, sent a collection of heads of Indian Corn grown out of doors in Yorkshire. Mr. Webb, of Calcut, had twenty-one varieties of *Nuts*; and Mr. J. Mitchell, Escrick Park, York, showed a fruit of the *Monstera deliciosa*. Mr. Fowler, Castle Kennedy, received a certificate for his *Abies Douglasii* var. *Stairii*, which was thought highly of, as was also Mr. Young's *Juniperus chinensis aurea*. Mr. R. Smith, of Worcester, showed a fine collection of small *Conifers* and ornamental trees and shrubs.

CRYSTAL PALACE FRUIT SHOW.

SEPTEMBER 6TH.

THE fruit shown on this occasion, in nearly every class, was of fine quality, and by no means limited in quantity. Apples specially were good, some of the specimens being unique as regards size and appearance. Pears and Plums were also well represented. Of Grapes there was a large collection, and Pines were of average quality. Peaches and Nectarines, too, were fine. *Gladioli* were in good condition, though the number of exhibitors was limited. Table decorations were nicely arranged, and many of them evinced advancing taste in this direction.

Fruit.—In collections of eight dishes, the first prize was awarded to Mr. W. Coleman, Eastnor Castle, Ledbury, for samples of Royal George Peach, Golden Gem Melon (a fine fruit), three splendid bunches of Black Hamburg Grapes, one Pine-apple, three bunches of Muscat of Alexandria Grapes, Pitmaston Orange Nectarine, Brown Turkey Figs, Jefferson Plums, all of very excellent quality; second, Mr. F. Deuxberry (gardener to Earl Darnley), Cobham Park, Gravesend, for Elruge Nectarine, White Marseilles Fig, Black Alicante Grapes, good Scarlet Gem Melon, Muscat of Alexandria Grapes, a splendid dish of Morello Cherries, and Royal George Peach. In the class of three Pine-apples, Mr. Henry Plummer (gardener to R. Thornton, Esq.), Cannon Hill, Merton, was first with three fine fresh fruit of Smooth Cayenne; second, Mr. Charles Harris (gardener to C. Bailey, Esq.), Stanfoist Gardens, Abergavenny, for three well-grown Queens; third, Mr. George Everleigh (gardener to R. N. Thornton, Esq.), Knowle, Sidmouth, South Devon, for Smooth Cayenne, Black Prince, and Antigua. Mr. Thomas Page (gardener to M. Leaf, Esq.), Park Hill, Streatham Common, also showed three nice fruit in this class. In the class of single Pines, any variety, Mr. Charles Harris was first, with a good Queen; second, Mr. M. Rochford, Page Green, Tottenham. In the class of Black Grapes, three bunches, Mr. W. Coleman was first, with three splendid bunches of Black Hamburg, as fresh as when cut, and with fine well-finished berries of good size; second, Mr. G. Halliday (gardener to J. Norris, Esq.), Castle Hill, Bletchingly, for three fine bunches of Muscat Hamburg, a somewhat difficult Grape to grow, but the finest flavoured black kind in cultivation. These were good examples of how it should be grown; third, Mr. W. Gammon (gardener to G. Boosey, Esq.), The Pines, Bickley Park, Kent, for good clusters of Black Alicante, well coloured and in fresh condition. Mr. W. Kemp (gardener to the Duke of Northumberland), Albany Park, Guildford, showed three bunches of Frankenthal in this class. The berries were of large size, but not well coloured. Mr. W. Bones (gardener to D. McIntosh, Esq.), Havering Park, Romford, Essex, had three very fine clusters of the last-named variety in this class, but they were not nicely finished. Mr. Lawley (gardener to F. Power, Esq.), Franks Hall, Dartford, Kent, had good Black Prince; and Mr. John Burnett (gardener to Mrs. Hope), the Deepdene, Dorking, had small, but nicely grown, Black Hamburgs. In the class of white Grapes, three bunches, Mr. W. Coleman was first with a large and well-finished cluster of the Muscat of Alexandria, in very fine condition, and neatly staged on pink paper, a colour which, next to purple, shows off white or yellow Grapes to the best advantage; second, Messrs. Lane and Sons, Berkhamstead, who had three large clusters, but not quite so well ripened as those to which the first prize was awarded—this firm also received first prize for Vines in pots; third, Mr. W. Cole (gardener to J. S. Budgett,

Esq.), Ealing Park, who showed smaller bunches than the last-named, but much better ripened. All the Grapes staged in this class were Muscat of Alexandria, which was shown by eleven exhibitors. For the largest bunch of any kind, Mr. W. Bones was first with Black Hamburgs, 6½ lbs. in weight; second, Mr. W. Coleman with a well-coloured cluster of the same weighing 4lb 10oz.; third, Mr. J. Douglas (gardener to F. Whitbourne, Esq.), Loxford Hall, for a large bunch of Mrs. Pince, weighing 4 lbs. 10 ozs.—the berries were very fine. In the class of Peaches, one dish, six fruit in each, Mr. Thomas Jones, Royal Gardens, Frogmore, was first with fine fruit of Barrington; second, Mr. G. King (gardener to R. Soder, Esq.), Highbeaches, Slough, for fine well-coloured Royal George; third, Mr. Jos. Smith (gardener to J. Swift, Esq.), Southfield Lodge, Eastbourne, for a splendid dish of Late Admirable. This class was well contested, there being nearly thirty dishes staged, two-thirds of this quantity being first-class fruit. For one dish of Nectarines, Mr. G. King was first with fine richly-coloured examples of *Violette Hâtive*; second, Mr. Thos. Frost, Bower Nursery, Maidstone, for beautifully-coloured fruit of the Pine-apple Nectarine; third, Mr. Jas. Smith, with fine well-ripened examples of Stanwick. There were nearly twenty entries in this class, the fruit exhibited being, on the whole, above the average as regards quality. For green-flesh Melons, one fruit, Mr. John Burnett was first with a nicely-ripened fruit of Hybrid Cashmere; second, Mr. W. Denman, Sandridge Park, Bromley, Kent, for Beechwood; third, Mr. G. Halliday (gardener to James Norris, Esq.), Castle Hill, Bletchingley, for a nice little fruit of Golden Queen. This is a nice little Melon, about the size of Scarlet Gem, and, like that variety, most beautifully netted. There were nineteen entries in this class. For scarlet-fleshed Melons, one fruit, Mr. W. Shaw (gardener to H. R. Price), Down Lodge, Epsom, was first with a little Scarlet Gem; second, Mr. Richbell, Tadworth, Epsom, for the same variety; third, Mr. W. Cole, with a large and peculiar variety of Scarlet Gem. Figs, single dish: First, Mr. W. Chisholm, Maidstone, with very fine fruit of the Brunswick; second, Mr. J. Smith with Brown Ischia; third, Mr. G. Mann (gardener to Mrs. Meeking), Slough, with fine fruit of Brown Turkey and Brunswick mixed. In this class there were seven entries. For Cherries, single dish, Mr. G. Sage, Ashridge Gardens, Berkhamstead, was first with fine examples of Morello; second, Mr. F. Deuxberry, with the same variety; third, Mr. W. Halder (gardener to H. Balston, Esq.), Springfield, Maidstone. Of Cherries ten fine dishes were shown. For Plums, three dishes, J. Douglas was first with fine fruit of Transparent Gage, Victoria, and Jefferson; second, Mr. Geo. Sage, with Goliath—a fine round purple fruit—Jefferson, and Kirke's; third, Mr. J. Bolton (gardener to W. Spottiswood, Esq.), Coombebank, Sevenoaks, with Jefferson, Kirke's, and Washington, a beautiful yellow fruit, delicately tinted with soft rosy-lilac; fourth, Mr. W. Holder, with fine examples of Greengage, Victoria and Jefferson. For dessert Apples, four dishes, Mr. W. Holder was first with Cox's Orange Pippin, Quarrendon, Kerry Pippin, and Jefferson; second, Mr. W. Jones (gardener to E. Purser, Esq.), Bridge House, Wallington, with Quarrendon, Nonesuch, Ribston Pippin, and another named Cox's Orange, but evidently not that variety. For kitchen Apples, four dishes, Mr. W. Holder was first with Blenheim Orange, Lord Suffield, Lord Derby, and Nelson's Glory; second, Mr. H. Pressley, Dulwich, with Blenheim Orange, Emperor Alexander, Manx Codlin, and Yorkshire Greening—all very fine; third, Mr. T. Jones, with Blenheim Orange, Lord Suffield, Ecklinville, and Frogmore Prolific; fourth, Mr. R. Webb, Culham House, Calcot, Reading, with Alexander, Astrachan, Fill Basket, and Lord Suffield. Both dessert and kitchen Apples were exhibited in splendid condition, there being nineteen entries in the latter class alone. For Pears, three dishes, distinct, Mr. Chas. Tivey (gardener to P. Gosset, Esq.), Bagot, Jersey, was first with Doyenné Blanc, Louise Bonne of Jersey, and Beurré d'Amanlis—all fine; second, Mr. W. Holder, with Beurré Clairgeau, Williams' Bon Chrétien, and Gratioli; third, Mr. J. Douglas, with very fine Williams' Bon Chrétien, Summer Beurré de Aremberg, and Beurré d'Amanlis; fourth, Mr. Thos. Frost, who had Louise Bonne of Jersey, Theodore Mare, and Williams' Bon Chrétien. Pears, single dish, for flavour, first, Mr. Chas. Tivey, with Beurré d'Amanlis; second, Mr. W. Holder, with Williams' Bon Chrétien; third, Mr. Thos. Frost, with the last named variety.

Gladioli.—In the class of thirty-six Gladioli, Messrs. Kelway & Son, Langport, Somerset, were first with a splendid stand of richly-coloured spikes in the freshest possible condition. The finest spikes were those of Victoria, a fine open salmon flower; Umbro, soft scarlet; Orelens, a rich crimson; Alphenor, a fine salmon; Lady Bridport, soft rose, flaked with salmon; and Meyerbeer, a rosy-scarlet; second, Mr. Jas. Douglas. In the class of twenty-four Gladioli, Messrs. Kelway & Son were again first with Victoria, a fine rosy-lilac fine bright scarlet; seedling unnamed; Eugene Scribe, a nice French flower, white, striped with rich rosy-lake; Petleys, a fine large scarlet flower, with white centre; Rhamis, a creamy-white, suffused and flaked with soft lilac; Satyrus, a rich flaked crimson-scarlet with lilac centre; and Hecamede, soft yellow and crimson-maroon. For twelve Gladioli, Mr. Jas. Douglas was first with fine spikes, in excellent condition, of Horace Vernet, a fine kind with fiery-crimson flowers, striped with white; Meyerbeer, a delicate rose, shaded with vermillion; Coryphee, white, shaded with bright rosy and striped with lake; Coral Caves, a fine salmon-flower, flaked with fiery vermillion or scarlet; Virgile, a clear scarlet, were the most effective; second, Rev. H. Dombrain third, Mr. Harrison Weir, with spikes of Oliver Goldsmith, creamy-white, with rosy tube; Lady of the Lake, soft rosy-lilac; George Gurney, crimson-scarlet, and others. For six Gladioli (seedlings not in commerce), Messrs. Kelway & Son were first with Lord Derby, creamy-white, flaked with rose in the tube; Mrs. Reynolds Hole, soft lilac,

streaked with carmine; Harrison Weir, a noble spike, salmon, shaded with bright crimson, maroon stripe; Lord Hawke, soft scarlet; Rev. H. H. Dombrain, flowers large, of good substance, of a soft rosy-scarlet colour, and white; second, Mr. J. Douglas, with nice spikes of Ivanhoe, white, flaked with deep carmine; Rob Roy, a clear fiery-scarlet; Mabel Glass, a white flower, having a peculiar speckled appearance, being profusely striped with deep rosy-carmine; Waverley, in the way of his Seedling 70, a clear scarlet and white; Carmine Queen, a soft rose, striped with carmine; and Seedling 71, a decided acquisition, a creamy-white flower, heavily flaked with rose-salmon.

Miscellaneous Subjects.—Mr. T. Jackson (gardener to G. Gower, Esq.), Titsey, obtained an extra prize for a collection of fruit, consisting of Grapes, Oranges, Pears, Nectarines, Peaches, Plums, Figs, and small orange-striped Queen Anne's Pocket Melons, pretty, but not edible. Mr. John Steele, 31, Dunstan's Place, Peckham Rye, had a good collection of vegetables, which were commended. Mr. W. Kemp exhibited a nice collection of Melons in this class. Mr. W. Lakeman, Thornton Heath, also exhibited a well grown collection of Onions, Potatoes, and other vegetables. Mr. W. Paul, Waltham Cross, staged several stands of Roses, Gladioli, and Pelargoniums; also a basket of *Euonymus flavescens*, of a bright golden colour, which, if constant, will prove useful for bedding and shrubbery decoration. Messrs. Jas. Carter & Co. had a good collection of Gladioli in excellent condition. Messrs. Downie, Laird, & Laing had a nice stage of general decorative plants, as Palms, Yuccas, Dracænas, Coleus, Phlox, *Sciadophyllum* (Aralia) pulchrum. Mr. John Ley, Croydon, had an interesting collection of stove and greenhouse Palms, Ferns, and other foliage plants, including a few plants of *Adiantum pedatum*, a hardy North American species worth general cultivation. From Mr. Chas. Turner came some fine stands of Dahlias, for which an extra prize was awarded. Messrs. Thos. Rivers & Son had a very interesting collection of miniature fruit trees both in pots and lifted from the open ground. Of table decorations, which formed a highly interesting feature of the show, an account is given in another column.

PRIZES FOR PLANTS NOT GROWN BY THE EXHIBITOR.

PERMIT me, through your columns, to inform the horticultural public that I have resigned the office of secretary-general to the Cercle Horticole of Lyons. The reasons which have forced me to take this step are as follows:—A question of small importance in the estimation of some persons, but of very great consequence in my opinion—had arisen on the occasion of the discussion on the programme of the next exhibition of the Cercle Horticole of Lyons. I stoutly maintained the principle that no exhibitor should be allowed to compete for a prize with plants which he had not grown himself, as I hold that the labour and care of the cultivator alone should be rewarded in these competitions. The majority of the meeting, however, thought otherwise, and I was obliged to submit. Against their decision I make a public protest by my withdrawal, as I cannot sanction by my presence a measure which I have always denounced as a fraud, and on which I will leave it to the horticultural world to pronounce judgment. As secretary-general of the Cercle Horticole of Lyons, I had hoped, through my numerous connections in Europe and America, to be of some service to horticulture. My resignation of the office does not altogether destroy that hope, for I shall still continue to devote what energy I have left to its interest.

Lyons.

JEAN SISLEY.

Awards at Vienna.—Messrs. Dick Radclyffe & Co., of High Holborn, were awarded a medal of merit at the Vienna Universal Exhibition for seeds, tools, and other horticultural appliances; and a similar award was also made to Mr. E. Lloyd, Horticultural Works, Grantham.

COVENT GARDEN MARKET.

SEPTEMBER 12TH.

Flowers.—Asters in small pots, Lilies of the *L. speciosum* type, Mignonette, Balsams, Myrtles, Vallotas, Bouvardias, and foliage plants still make up the supply. Small succulent plants, as Aloes, Cereus, Opuntias and Stapelias are still supplied, and recently flowering bulbs of the *Belladonna* and *Guerney* Lilies have made their appearance. Some very beautiful wreaths are being made of *Immortelles*, and very elegant bouquets are still being composed of *Stephanotis*, *Bouvardias*, *Tuberoses*, *Jasmine*, *Corn-flower*, pink *Pelargoniums*, and *Orchids*. A few *Violets* have made their appearance during the past week.

Prices of Fruits.—Apples, per half-sieve, 9d. to 1s.; Cherries, per lb., 9d. to 1s. 6d.; Chilies, per 100, 2s.; Figs, per doz., 6d. to 2s.; Grapes, hothouse, black, per lb., 1s. to 6s.; Muscats, 2s. to 6s.; Lemons, per 100, 1s. to 25s.; Melons, each, 2s. to 4s.; Nectarines, per doz., 3s. to 8s.; Oranges, per 100, 12s. to 24s.; Peaches, per doz., 6s. to 12s.; Pears, per doz., 1s. to 4s.; Pine Apples, per lb., 3s. to 6s.; Tomatoes, per doz., 1s. to 2s.; Walnuts, per bushel, 12s. to 20s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 1s. 6d. to 3s.; Beans, Kidney, per half sieve, 1s. 6d. to 2s.; Beet, Red, per doz., 1s. to 2s.; Cabbage, per doz., 2s.; Carrots, per bunch, 3d. to 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 3s.; Cucumbers, each, 3d. to 6d.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horse-radish, per bundle, 4s. to 6s.; Leeks, per bunch, 3d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 4s. to 6s.; button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 9d. to 1s.; Potatoes, per bushel, 3s. 6d. to 5s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Scorzonera, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, 4d. to 8d. Vegetable Marrows, per doz., 1s. to 2s.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

WYCOMBE ABBEY.

THIS, the seat of Lord Carrington, is situated close to the town of High Wycombe. The estate is divided by the road which leads from Wycombe to Great Marlow; the mansion, a fine baronial residence, being situated on one side of the road, the far-famed fruit garden on the other. This structure, which occupies the lowest part of a well-timbered and finely-undulated park, is in the old English Gothic style, and is built of the same kind of stone as that of Windsor Castle, viz., of boulders, which, in certain places in Buckinghamshire and adjoining counties, occur a foot or so below the surface, but not generally of large size. This kind of stone is of great hardness, and in this case the mortar joints are fortified with small chips of the conglomerate or "plum-pudding stone," which are driven into them in close rank. This stone and style of building is almost everlasting. The park contains some noble specimens of Elm, Oak (especially the Turkey) and Oriental Planes. One of these Planes, which stands on the south side of the mansion, has a spread of branches which almost sweeps the turf for more than a hundred yards in circumference; and there are several more in the grounds little inferior to this noble plant. Singularly enough, however, the Western Plane, growing in close proximity, does not succeed at all, and cannot be considered anything better than a sickly tree, the falling leaves of which are a perpetual nuisance. This is a remarkable fact connected with a tree which thrives even in smoky towns, and yet does not succeed on the breezy downs of Buckinghamshire. Near by is a very fine specimen of the Tulip tree, the quaintly-marked flowers of which, as well as the leaves, Mr. Miles informed us he found admirably adapted for ball and dinner-table decoration. Flower gardening at Wycombe only holds a secondary place. There are a few beds of summer-flowering plants dotted over the grass, but if they were blotted out, the fine velvety turf would not suffer thereby, but would be immensely improved. A few years back, cattle grazed up close to the mansion, but recently some few acres have been enclosed, and we believe there is an intention of taking in more ground in extension of the lawn. An avenue of fine Elms runs parallel with the carriage drive, but this has been unfortunately divided by a plantation which, no doubt, will be ultimately removed, so as to give full scope to the vista.

The kitchen and fruit gardens are divided from the dressed ground by a public road, under which is an arched sub-way, built of flints and fancy stones, a mural combination of considerable interest. Emerging from this tunnel, on the right hand side are ranges of plant, fruit, and forcing houses—plain unpretending buildings, many of them of ancient date, but still containing fruit of first-class quality. In the plant department, plants only suitable for cutting and indoor decoration are grown, and Ferns in large quantities for cutting; in fact, we might almost say everything in this establishment is grown for cutting. The Vineries are steep and rather narrow buildings, but the produce is of very superior quality, though the old Vines are not so good as they were some few years back. The roots ramble inside and outside the house, so, last year, Mr. Miles lifted the outside roots and renewed the border, and this season he proposes carrying out the same scheme with regard to the inside borders. On Vines thus treated the fruit is wonderfully improved, some Lady Downes' being exceedingly good, while the Mrs. Pince Black Muscat is in grand condition. We may, however, remark that Mr. Miles, like Mr. Henderson, at Coleorton Hall, takes his earliest Grapes from small span-roofed pits, and finds great advantage in so doing. The Peach houses are of the regular lean-to form, the early ones being considerably longer than the late ones, which are merely narrow cases. The trees, however, in all, are in first-rate condition, the foliage being

bold and well ripened, and the wood and buds perfectly matured. Here red spider is not allowed to colonise, and the trees show the advantage of freedom from its attacks. Fine, however, as the indoor Peaches are at Wycombe, and suitable as the soil undoubtedly is for Peach-growing, this fruit is not at home except under glass, the trees being subject to gum and canker. Upon some remarkably fine young trees Mr. Miles is trying the experiment of biennial, if not annual, root-pruning; that is, a given space is allotted to the roots, and beyond that they will not be allowed to go. This experiment we shall watch with interest, and probably some day record the result.

Cherries are forced here with singular success, a fact to which our great fruit shows fully bear witness. The secret of Cherry-forcing, paradoxical as it may appear, is not to force at all, but to give them a free circulation of air both night and day. Those who want finely-flavoured Strawberries may take a hint from Mr. Miles's practise: all his plants in different houses, just as the fruit shows signs of ripening, are collected together and placed in the Cherry house, and here, under a free circulation of air, they ripen most perfectly, and are of the finest possible flavour.

The chief point of interest at this interesting place is, however, the Pines. These, as is well known, whether at midsummer or midwinter, are always good; indeed, it is questionable whether the winter ones are not the best. Mr. Miles does not grow many kinds; Queen, Black Jamaica, Smooth and Prickly Cayennes, Charlotte Rothschild, and a few examples of Providence being all that he requires, and these are rarely more than twelve months old before they are in fruit. These Pines are grown in a series of small half-span houses, each about 20 feet long and 10 feet wide, with a 6-foot bed in the front, and a narrow pathway and border at the back. In addition to Pines, these pits are also used for Melons, Cucumbers, French Beans, &c., and are remarkably handy places. Each of these little pits will hold about twenty full-grown Pine plants, standing so that the leaves are not at all crowded, and, in fact, during the growing season, they scarcely do more than touch one another. Indeed, Mr. Miles's success as a Pine grower may be explained in a few words. A thoroughly-matured sucker, grown so that it never knows a check from its being first potted until the fruit is matured. When we say no check, we mean no material check; of course the full-grown plant has to be matured, and at that time it is exposed to a free circulation of warmed air, but the temperature, both at root and top, is so lowered as to bring the plant into a state of comparative, if not positive, rest. This secured, it is only necessary to renew the bottom heat, and almost immediately the incipient fruit begins to show itself. For winter fruiting, Mr. Miles has two steeper and lighter-roofed houses than those in which summer fruit is grown, and into these the plants that are now swelling their fruit are placed. In another, he has a set of plants on which he is trying the effect of eight or ten different kinds of concentrated manures, and, though they are all doing well, in no case are they so good as in the loam of the district, pure and simple. This Mr. Miles collects from some common land on the chalk formation, some three or four miles away. It is cut not more than two inches thick, is stacked for not more than ten or twelve months before being used, and, though strong and loamy, it is so full of rich fibrous matter that scarcely any plant could refuse to grow in it. This is used in its virgin purity, stimulants of vigour being applied by means of the watering pot. But the remarkable thing is (at least so it would be considered by some), that Mr. Miles's plants are not large, but each may be said to be a concentration of the kind of material out of which good fruit is made. Succession plants, or rather suckers, when first potted, are grown in small pots; but still the same rule, of allowing each plant full breathing space, is observed. Figs trained to trellises close to the glass are also grown here with success.

The kitchen-garden, a deep alluvial deposit, contains a fine assortment of the best fruits both on walls and in open quarters; and of vegetables there is abundance. The fruit crop here, like that in most other places, is not a full one, but still there is a large stock of superior fruit, especially in the way of Apples and Pears.

NOTES OF THE WEEK.

— MR. HARRY VEITCH informs us that he has lately seen a fine specimen of the Camphor tree about 25 feet high in the open air in Mr. Fox's garden at Pengewick, Falmouth. Acacias do well in the open air in the same garden.

— WE have received some of the dried bracts or floral leaves of the new double Poinsettia from Dr. George Thurber, the well-known New York botanist, who has a very high opinion of its beauty.

— WE read in a foreign journal that a cultivator of Zurich recently met with his death from incautiously handling some guano while suffering from a wound in one of his hands. The guano penetrated the wound, poisoned the blood, and induced a state of suffering which soon terminated fatally.

— A CURIOUS and beautiful effect was produced in one of the ice-making machines built lately in Philadelphia. It was a cake of manufactured ice, in the centre of which, completely inclosed by the translucent material, was a bouquet of fresh flowers. Every leaf and flower was perfectly visible, while the brilliancy of the colours was enhanced by the refraction through the ice.

— ON the 25th of last month the neighbourhood of Louviers, in the north of France, was visited by a terrible hailstorm, which destroyed nearly all the glass in the gardens and nurseries, swept the fruit and leaves from the trees, and completely riddled the Cabbages, Lettuces, and other vegetables that were exposed to its fury. Some of the hailstones measured 6 inches in circumference, and weighed over 3½ lbs. each.

— THE Torrey Botanical Club—so named in honour of its first president, the late Dr. Torrey—holds its meetings at the Herbarium, in Columbia College, in the evening of the last Tuesday of every month (July and August excepted), and all botanists, either residing in or visiting the city of New York, are invited to attend; or, if they cannot be present at that time, to call on the president of the club at 245, Broadway, or on the secretary at the Herbarium. English horticulturists and botanists visiting America should take note of this, as we know, from personal experience, that they are sure to be kindly received, and directed in every matter on which they may seek information.

— WINTER seems this year to have ousted autumn from its usual place. Disagreeable though this be, it enables us to test the value of the new and magnificent races of Clematises for the embellishment of our gardens in autumn. We visited Messrs. George Jackman's nurseries at Woking last Monday, and, notwithstanding the many cold rains of the previous days, the Clematises—in great variety, and trained in various ways—were blooming gloriously, and affording a display of colour which probably no other hardy plants could at this time of year equal.

— IN a stove in Mr. Parker's nursery, at Tooting, there are at present many plants of the following *Curcumas* in flower—viz., *C. Roscoeana*, with bright orange bracts and red flowers; *petiolata*, with deep mauve bracts and yellowish flowers; and *cordata*, a beautiful kind, the lower bracts of which are greenish-blue, and the upper ones blue tipped with intense brilliant purplish-scarlet. Considering the paucity of indoor blooming plants at this season, these *Curcumas*, so distinct in flower and leaf from most other plants, and also so easily grown, should be more fully appreciated.

— THE Abbé Rolland has communicated to the *Cultivateur de la Région Lyonnaise* an "infallible remedy" against the *Phylloxera*, which, after two years' trial, he recommends "with confidence" to Vine growers. It consists in inoculating the Vine with the pure essence of *Eucalyptus globulus*. A broad incision is made through the bark at the neck of the Vine, in which a few drops of the essence are deposited by means of a small camel-hair brush. The result is, that in about three days the *Phylloxera* entirely disappears, while the Vine is not in the least degree injured by the operation. The incision may be made through any other part of the bark with equal success, but the result is more speedily attained the nearer it is made to the roots.

— THE value of many hardy perennials of the Composite family as late-blooming plants is now strikingly evident wherever they are grown in quantity. In addition to the various species of *Asters*, some of which are flowering and others commencing to bloom, we noticed this week various other plants at Kew which would help to make our borders gay throughout the present month. Prominent among these were the *Helianthus*es, of which there are numerous kinds, the best probably being *latiflorus* and the well-known double variety of *multiflorus*. The *Rudbeckias*, too, are now finely in bloom, particularly *R. hirta* and *tomentosa*; *Californica* is also another good kind. The old *Helenium autumnale* is likewise flowering freely as usual, and is one of the best perennials in bloom at the present time. To the above may be added, moreover, the fine golden-yellow-flowered *Coreopsis lanceolata*, and the showy white *Pyrethrum*

serotinum. With these and one or two others one might have as fine a collection of perennials belonging to this family in flower at one time as could be met with in any month in the year.

— OUR seed shops are fast becoming stocked with Dutch bulbs, concerning which the general report is that they are small this season, but that they are firm and of good quality.

— IN the bulletin of the Torrey Botanical Club mention is made of a singular specimen of the *Larix americana*, from the greater number of the cones of which branches were sprouting this summer.

— ON the 21st and 22nd of this month a general exhibition will be held at Spa, in Belgium, at which prizes will be given for flowers, ornamental plants, vegetables, fruit, wild flowers, and Mushrooms. The prizes are open to exhibitors of all nations.

— THE Royal Park, Leeds, so long used as a place of amusement, has been disposed of by auction for building purposes, for £16,500, at the rate of about £825 per acre.

— THE new *Odontoglossum Roezlii* is now in flower in Mr. Bull's nursery, King's Road, Chelsea. It has large flowers of snowy whiteness, blotched with bright purple, and is a valuable addition to an already beautiful group of cool Orchids.

— AMONG many interesting plants now to be seen in Mr. Anthony Waterer's nursery, at Knaphill, is a remarkable specimen of the tree *Andromeda* (*A. arborea*), now in full bloom. It is nearly 20 feet high, and bears small white bell-like flowers in racemes, so like those of the *Lily-of-the-Valley*, that one might well call it the *Lily-of-the-Valley* tree.

— THE pretty little *Eria convallarioides* has just flowered in Messrs. Low and Co.'s nursery at Upper Clapton. As its specific name implies, it very much resembles the *Lily of the Valley*, and, like that well-known plant, it is deliciously sweet-scented, one small sprig being sufficient to scent the house in which it is growing.

— AT Messrs. Lee's we noticed the other day about a dozen plants of *Todea superba*, just imported from New Zealand; they were pushing forth young foliage, and appeared not to have suffered either by the voyage or from removal, care having been taken to keep their roots undisturbed in native soil, which was imported along with them.

— AT Constantinople, according to M. Barillet, the Jessamine is extensively grown for the manufacture of pipe-stems (*chibouques*). For this purpose the stems are carefully trained until they have attained the desired length and thickness, care being taken to protect the bark by a covering of varnished linen or calico. Two or three times a year the bark is sponged with Citron-juice, which is said to give it the light colour so much sought after. Some of these pipe-stems are over 16 feet in length, and sell for as much as £20 each.

— THE handsome rose-flowered Japanese Cherry (*Cerasus Lannesiana*), of which we have given an account at p. 108, Vol. II., of THE GARDEN, is finely figured in the current number of the *Revue Horticole*. The flowers, when in bud, are of a deep bright rose colour, and, when fully expanded, are of a delicate rose or pink. Up to the present, the specimen in the Jardin d'Acclimatation, at Paris, although flowering profusely, has not matured its fruit, as they invariably drop off when about half grown.

— THE Council of the Pharmaceutical Society are desirous of forming a complete herbarium of medical plants from every quarter of the globe, whether officinal or not. Mr. Holmes, the Curator of the Society's Museum, 17, Bloomsbury Square, will be glad to enter into communication with any foreign botanists and pharmacists willing to co-operate in the work.

— THE Rev. Thomas Garnier, Dean of Winchester, who died recently at the age of 98, was the "father" of the Linnean Society, having been elected during the last century, in 1798, only ten years after the foundation of the society. Some of his contributions to botanical literature bore the date of last century.

— WE understand that the bryological books and exceedingly rich and important collections and preparations of Mosses left by the late Professor Sullivant, whose death we recorded last week, are consigned to the Grey Herbarium of Harvard University, with a view to their preservation and long-continued usefulness. The remainder of his botanical library, his choice microscopes, and other collections are bequeathed to the State Scientific and Agricultural College just established at Columbus.—*Nature*.

Belgian Fruit Gatherer.—In your number of last week (see p. 211) you have a wood-cut and short description of what is called a "Belgian Fruit Gatherer." I have had nearly a similar one in use for these ten years; but in my case the handle is fixed differently from that of the one figured, viz., in the same line as the disc—just in the same position as the handle of a hair-brush. This is a better plan, as all the gatherer has to do is to get a fruit between the teeth, and pull or comb it off. I made mine from a description I saw in some cheap work coming out at that time, called, I think, "Garden Management," and I think it it was said to be an American invention.—J. GILLBANKS.

THE GARDEN IN THE HOUSE.

DINNER TABLE DECORATIONS.

DURING the autumn and winter season these floral embellishments are specially desirable. Their arrangement need not be of an expensive character, while a most charming variety may be indulged in to almost any extent by those who possess a keen sense of the beautiful in nature and art. The general arrangement for a small party of six or eight persons is to have three of these light stands, the central one a few inches taller than the others, or even if they are all of the same height, a little tact in arranging the longest spikes of flowers, or sprays of foliage, in the central vase will remedy this sameness and formality. Another arrangement is to have a March stand for the centre piece, and a pair of simple glass vases—the plain trumpet pattern being preferable—one on

flowers of graceful form and decided colours. *Eucharis*, *Vallota*, many kinds of *Lilies*, *Crinum*s, *Pancratium*s, and the lovely blue African Lily (*Agapanthus*) are specially to be recommended. The wax-like flowers of both the rosy and white *Lapageria* may be neatly mounted on wires and suspended from the margins of the vase, where they look natural and have a good effect. Sprays of *Jasmine*, white *Bouvardias*, and pearly *Stephanotis* will suggest themselves for this use, and some *Orchids* are very chaste and beautiful. The use of the choicest exotics may be indulged in, if they are procurable, but they are by no means absolutely essential in order to compose a truly effective vase. The decorations here figured contain very few flowers, and still they were very beautiful and much admired by all who saw them. The bases of the stands are concealed by a fringe of large Fern fronds, on which are laid flowers of the snowy *Eucharis* and the fiery *Scarborough Lily* alternately. Among these, the beautiful



First Prize Dinner-table Decorations at the Crystal Palace.

each side, while occasionally, for a very small party, one stand neatly furnished will be sufficiently effective. As to the manner in which flowers should be arranged no amount of written instructions would teach so much as a glance at the accompanying illustrations—which have been carefully made from first-prize groups. Next to Ferns, ornamental Grasses occupy a prominent position, some of the common species being invaluable for dinner-table decoration. There is a delicate grace about them not possessed by any other plants, and they have the additional advantage of lasting for any length of time when carefully dried. Some of the more delicate-growing Horse-tails are valuable aids in this way, and keep fresh for a long time in water, while feathery sprays of the common *Asparagus* have few equals for delicate green freshness and beauty. Nearly all Ferns may be pressed into this service, and amongst flowering plants the most useful for this purpose vary according to the season, but preference should be given to bold

blue buds and flowers of *Agapanthus umbellatus* peep here and there, bright as the sky on a fine autumnal day, and the effect of the lower part is still further enhanced by the judicious use of *Lagurus ovatus* and other graceful ornamental Grasses. The tier above is fringed with Maiden-hair Ferns, beneath which hang the beautifully-formed blooms of both the rosy and white-flowered *Lapagerias*. The other flowers here, as below, are *Eucharis* and *Vallota*, with the addition of *Franciscea calycina*, *Rondeletia speciosa*, and blue African Lily. The trumpet-shaped vases above are lightly filled with spikes of *Chelone barbata* or scarlet *Pentstemon* and light Grasses, the whole forming a most charming arrangement. The trumpet-shaped vases above are filled with water, but the flat receptacles below, which are concealed by the flowers and drooping foliage, are filled with wet sand, which is equally as good for preserving the flowers, and also affords a firmer hold, each flower remaining in it exactly where it is placed.

W.

THE ARBORETUM.

SEASIDE PLANTING.

NONE but those who have been engaged in forming plantations or pleasure-grounds on an exposed sea-coast can form any idea of the difficulties to be encountered in carrying out that kind of work. My experience, which has been considerable, may therefore aid others who have work of that character to perform. The principal evils which one has to contend with in seaside planting are the saline particles, which are carried by the wind and deposited with such persistent force on the leaves and tender shoots of trees and shrubs planted near the seaboard as to cause them to burn and wither away. This is more particularly the case when the plants are young and have just been transplanted from the sheltered rows of the nursery-garden and other places, where they have not been exposed to the full force of the south-west or other gales that come laden with salt from the ocean. Another evil, nearly as great, is the fact that the young trees and plants become loosened through wind-waving, unless they are well staked, leaving often a large hole near the neck or collar, in which water rests, and causes the bark at that point and the roots to decay. Firm planting and staking are great points in the management of young plantations near the seaside.

Preparation of Soil.

Everyone who has had any experience in planting knows how necessary it is to deeply dig or trench the ground; but this in some instances can be wrongly carried out. Wherever there is a sub-soil of stiff clay, or poor binding loam, I hold it to be wrong to throw the good top spit into the bottom of the trench, and to bring the sour clay or poor loam to the top. Roots make no progress in such sterile soil, and the tops have no opportunity of making a vigorous start. Moreover, I have often seen these kinds of soil run together, and set as firmly as cement for some inches deep on the surface, so as to be impervious to air or rain, and the young roots taken from the well-prepared soil of nurseries refuse for some time to feed on the sour poor soil in which they find themselves. In all cases in which the soil is as I have just described, it is preferable to trench, so that the best material can be kept on the top. If the second spit of soil is equal, or nearly so, in quality to the top soil, trenching should be performed in the ordinary manner of casting the first spit into the bottom of the trench and the lower one on the top, this being by far the quickest way; and in some instances, where the under spit is composed of sandy poor loam, I would bring it to the top, as this kind of soil speedily settles with a few showers round the base of the young trees, without baking or being impervious to rainfall, as the soils I have before mentioned are. All heavy clayey soils should be thoroughly drained previous to being trenched and planted; the draining can be done by means of open drains or ditches in ordinary plantations. Spaces for open drains should be left until the trenching and planting are done, when they can be carefully thrown out, with smooth sloping sides, and the surplus soil cast among the young plants. I prefer 4-inch common socket drain-pipes, and, if obtainable, I would put some common rubble as a slight covering to the pipes, and turn a turf sod upside-down on the top of the rubble. If the latter cannot be obtained, place the turf as above-mentioned on the drain-pipes. I think it is always best to allow the land to have some days to settle after trenching previous to putting in the plants; and, if a good heavy shower has taken place between the time of trenching and planting, so much the better for the young trees. In chalky and stiff hard lands, I would, if labour could be afforded, trench three feet deep.

Selection of Shrubs and Trees.

Among forest-trees the Elm stands in the foremost rank, owing to the way in which it manages to grow aloft and spread its ponderous limbs direct in the teeth of the wind. On the south coast, in many neighbourhoods, are found some magnificent examples of Elms growing in most exposed situations. In the old town of Eastbourne some splendid Elms grow within a few hundred feet of the sea, and in the new streets and esplanades recently made there, the Cornish Elm is the tree selected to form the avenues and shade-trees of that

watering place, and the manner in which they are growing fully justifies the choice. The Sycamore likewise thrives well near the sea, and, owing to its rapid growth, is also a valuable tree. Oak, Birch, Willows, and Poplars, Ash, and in fact every kind of deciduous trees, may be used in mixed plantations near the sea, for the sake of variety of foliage and expression; but the two first named are the most certain. It is, however, not deciduous trees that are the greatest sufferers from the salt spray. Evergreen trees and shrubs are the most injured, and many, particularly Conifers, cannot exist at all within the salt line. Fortunately, however, there are a goodly number that do withstand the sea breeze, which, with careful and judicious grouping and planting, produce a good effect where other things would fail. The following is a list of such as I have tried and know will succeed, viz.: *Pinus austriaca*, a Conifer which grows rapidly and affords good shelter. I have found this Pine to resist the effects of the salt, and to grow in the most exposed situations, even in the form of single trees, as well as in avenues, having no shelter whatever. It succeeds best planted when about 18 inches or 2 feet in height. I have often lifted it when 6 feet and 8 feet in height with success. The following Pines will also grow near the sea, if not in too exposed situations, viz., *Pinus Cembra*, *insignis*, *Pinaster*, the Corsican Pine, and the Aleppo Pine. The *Pinus sylvestris*, or Scotch Fir, after it has been planted some time, resists the salt well, but I have had young plants of it, fresh from nursery beds, so injured by salt that many of them died. Among the Piceas I found the following to do well, viz., *Picea lasiocarpa*, *P. nobilis*, *P. Nordmanniana*, *P. Pinsapo*, and *P. grandis*. Of the Fir tribe, I found *Abies canadensis*, *Douglasii*, *Menziesii*, *Clanbrassilliana*, and *pygmaea* all to have great power of resistance as regards sea breezes. Young plants, when first exposed, particularly if obtained from inland nurseries, sometimes suffer. I would recommend everyone who has planting to do by the sea to obtain the plants near at hand, and from the most exposed nurseries they can find. In continuing my list of plants and trees that will succeed well under ordinary care I must not omit *Araucaria imbricata*, which is one of the very best for the purpose, and one that bears transplanting well, even when nearly 20 feet in height. This *Araucaria* will grow almost close to the edge of the sea. Another class of useful trees for seaside planting are the Cypressess, of which I found the following do well, viz., *Cupressus Lambertiana* and *macrocarpa*, the latter having quite a notoriety as a seaside plant, which on the south coast is fully borne out by the many fine examples of it to be met with. In a garden at Eastbourne I saw a fine example of this fine Cypress upwards of 50 feet in height, and about the same in spread of the branches. Last year I planted some fine trees of *Cupressus Lawsoniana* in very exposed situations, where they stood many a trying breeze, but they were not at all injured by the salt. I also found *Thujopsis borealis* and many of the *Thujas* bear exposure well, as did also *Fitzroya patagonica*, and several of the Junipers and Yews. Among evergreen trees and shrubs the evergreen Oak (*Quercus Ilex*), Hollies, *Euonymus*, *Phillyreas*, Bays, Portugal and common Laurels, *Laurustinus*, *Arbutus*, *Erica codonoides* and *mediterranea*, and *Rhododendrons*, if only slightly sheltered, also do well. In fact, there are many other well-known trees and shrubs that bear almost any amount of exposure to the sea breeze. Among these I may mention the Tamarisk, which grows near the seashore everywhere. In St. Michael's, in the Azores, *Pittosporum undulatum* and *Tobira* grow down to the edge of the sea, and *Camellias* may be found only a few hundred feet away from it. The common green and silver-striped *Euonymuses* are the best plants with which I am acquainted for protection to borders of low tender shrubs. Their rapid, compact, and sturdy habit of growth renders them almost as impervious to wind as a brick wall; consequently, when planted, either as a hedge-row or in broken lines, they form excellent nurses and protectors to the more tender plants. I have never found the *Euonymus* to be injured by salt spray, though I have seen it growing close to the sea. I have known it to grow from 18 inches high to the height of 6, 7, and 8 feet in a few years. For forming masses on embankments I prefer it to the common Laurel. It bears cutting in any shape, and is a plant admirably adapted for

forming divisions between small properties. No one, therefore, need despair of making gardens and plantations near the sea, with so much material from which to choose, if they have only good soil, and will trench, plant firmly and thick, and by all means stake young trees for a year or two. By planting the Austrian Fir in belts four or five deep round the outer edge of plantations, they speedily form a thick screen, and shelter the less hardy trees. In narrow and exposed borders of ornamental shrubs an excellent screen or nurse can be thus made:—Drive some stakes firmly into the ground about 4 feet apart, interlace them with wattles, and draw or pack them firmly with green Furze. This will afford protection for two winters, by which time the trees and shrubs will have become established, and will protect one another.

Time of Planting.

There are a variety of opinions as to the proper time to plant trees and shrubs—or, perhaps, I should say, as to the different times at which they may be planted. Some say, “plant at any time,” and this may succeed occasionally. But, when one has forty or fifty acres of plantations to put in, midsummer is not the time one would choose for the operation, even if supplied with hydrants and similar appliances. My experience points to early spring as the best time for seaside planting. Trees and shrubs planted in the early autumn are subjected to the whole of the winter’s surly blast, which, in addition to the singeing they get from the salt spray, robs them of more than half their leaves. I am now alluding to situations very much exposed. With the shelter of a hill, or of strong belts of plantation, I would plant in October rather than in spring, particularly if I were sure that the winter would be open, such as we had last year. I have, however, planted young Austrian and Scotch Firs from the same nursery both in autumn and in early spring, and have found the spring-planted ones to succeed infinitely better than those put in in autumn, which got burnt so brown with salt spray as to be to all appearance dead, and, in fact, many of them were; whilst the spring-planted trees rarely or never turned a leaf, and failures among them were rare. I have mentioned the neighbourhood of Eastbourne as possessing many fine examples of seaside planting. There is one in particular worthy of special notice, viz., the property of Mr. Thomas. It is situated in a somewhat sheltered valley at the foot of the Southdowns. The planting commences in the bottom of the valley, and continues to the top of the Downs, and apparently consists of some two or three hundred acres of well-managed wood, in which the mingling and harmonising of the ordinary forest-trees, such as Beech, Birch, Larch, Firs, Oak and Chestnut are so well carried out as to form one of the prettiest summer and autumn sylvan pictures I have ever seen. This place has the appearance of not having been planted more than twenty-five or thirty years.

PETER WALLACE.

The Wood of Paulownia.—*Paulownia imperialis* is used to a considerable extent in this country as an ornamental tree. M. Carrière, of the Jardin des Plantes, has recently called attention to the value of its timber. He thinks that the extreme lightness of the wood has caused it to be neglected. A well dried branch of a young tree is scarcely heavier than Cork. The wood from an old tree is more compact, and is susceptible of a fine silky polish. The striking peculiarity of the wood is that it does not shrink, nor warp, nor split, even when green, or however thin it may be cut. The Japanese use it in thin veneers for the same purposes that we use pasteboard—to make boxes, &c. M. Carrière thinks that when the value of the tree becomes better known it will be planted along roads and such places.

Fine Cryptomeria Lobbii.—When looking over the grounds at Whiteford House, near Callington, Cornwall, the property of Sir W. Call, the other day, I observed a remarkably fine and well-grown specimen of what appeared at a little distance to be a *Wellingtonia gigantea*, and on remarking to the gardener (Mr. Richardson), who was showing me over the place, what a well-furnished specimen it was, he informed me that it was not a *Wellingtonia*, as I had imagined, but a fine specimen of that beautiful Conifer, so seldom seen in a large state in this country, *Cryptomeria Lobbii*. It seems, from what the gardener said, that I was by no means singular in mistaking the tree for a *Wellingtonia*, as nearly every one who came there did so till they inspected it closely. This is by far the finest

specimen of this Conifer I have ever seen; it must be over 50 feet in height, and it is beautifully and densely furnished with handsome deep green foliage down to the ground. The foliage, indeed, is of a so much deeper shade of green, and the tree is also so much denser and closer a habit of growth than the better-known *Cryptomeria japonica*, that a very fair specimen of the latter growing close to it looked quite thin and poor beside it. This tree was planted about twenty-five years ago by the late Sir William Call. There are also here fine specimens of *Abies Douglasii*, *Picea nobilis*, and of the beautiful *Fraxinus Ornus*, or flowering Ash—a tree much less grown than it should be.—W. E. G.

Renovating Old Trees.—The following is a description of the means used to renovate an old favourite Ash tree, which is supposed to be more than a hundred years old, and which, for several seasons back, has showed unmistakeable signs of decay, so much so that every storm strewed the ground about it with dead branches and limbs. At one time, now a considerable number of years ago, there was a permanent seat fixed round the base of the trunk, which made a flat surface for the feet necessary, in addition to the space taken up by the seat. The effect of this was that a number of large knarly roots were exposed to the action of the weather, and this, as well as the surrounding ground, got entirely over-run with the Snowberry plant; so, therefore, the soil must have been much exhausted. With the view of, if possible, preventing the old tree from dying, we had the ground trenched for a distance of from 10 to 12 yards, thoroughly eradicating all roots other than its own, and then sloped up the soil so as to entirely cover all the roots with earth, afterwards finishing with turf, which is mown about four times in the season. The result of these operations has been that the tree, even to the very trunk, has pushed forth a number of young twigs, which have clothed with fresh foliage, and have made it a very interesting object to those who formerly had seen it only bearing a few leaves at the extremity of the branches, and not even on all of them, for many of them were already dead. Throughout the whole tree, however, wherever there was life in the bark, there is now freshness and beauty. All, therefore, interested in saving fine old trees showing signs of debility, should lose no time in adopting similar means to those just described, and success will be almost sure to be the result.—H. ROSE, *The Gardens, Grangemuir, Pittenwee.*

Two Desfontaineas.—As that beautiful flowering shrub, the *Desfontainea spinosa*, and its relative hardiness in different parts of this country seems to be exciting a good deal of interest just at present, I think it may interest some persons to learn that I have for several years had in my collection two distinct varieties of this beautiful shrub, both of which have proved themselves perfectly hardy with me; they are the ordinary *D. spinosa* and *D. spinosa Hookeri*, sent me by Mr. Van Houtte, of Ghent. This latter variety is perhaps of rather more erect and pyramidal habit, has narrower foliage, which is also a deeper green than the type, the blossom tubes are decidedly narrower, and the yellow outside colour at tip of flower is of a broader and more clearly-marked character. Both varieties blossom freely with me every year; but I have never seen the fruit or seed produced anywhere save on the exceptionally fine specimen at Rockledge, Monkstown. I have never seen any other specimen of *D. Hookeri* except my own.—W. E. G., in “*Gardener’s Record*.”

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Forests of Algeria.—These are very valuable, though they are occasionally injured by periodical conflagrations, caused by the Arabs, in order to gain better pasturage. They produce several species of Oak and Cork, the Aleppo Pine, from which resin is extracted; the Cedar of the Atlas, a most valuable timber for building purposes and cabinet-making; the *Thuja*, celebrated even in the time of the Romans as an ornamental wood; Ash, Elm, &c. These forests cover an area of about 3,500,000 acres, and of these 376,355 acres have already been conceded to private individuals, and 200,000 have been given up for the use of the native population.

The Fulham Oak (*Quercus Cerris Fulhamensis*).—A singular story is related with regard to this Oak. In the winter of 1837-38, which is generally known as “Murphy’s winter,” loud reports, similar to those of a pistol, issued from among the branches. These, it was afterwards discovered, were caused by the frost making the bark burst in various places. Previous to this, the main branches were devoid of small spray, but during the summer of 1838, even the thickest of the stems became covered with small branches, formed, no doubt, from adventitious buds, and they have continued to grow ever since.—PETER WALLACE.

Evergreen Propagation.—What is the best month for taking off and planting cuttings of *Escallonia*, *Veronica*, *Aucuba japonica*, and *Tamarisk*; and what is the best time for planting them out afterwards?—A. GERALDINE. [*Escallonia* and *Aucuba* may be propagated by means of layers or cuttings, made of the young wood, put in during the spring, but the layers are perhaps best if a small number only is required. *Tamarisk* and *Veronica* strike from cuttings nearly as freely as *Willows*, and may be inserted in a shady position any time during the summer months. As regards planting out evergreens, some recommend September as the best time to perform the operation; but we believe, with care, they may be planted at all times of the year.

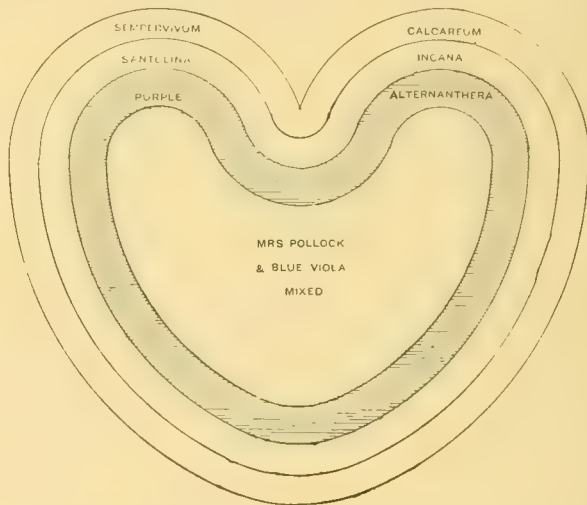
THE FLOWER GARDEN.

FLOWER GARDENING IN HYDE PARK AND KENSINGTON GARDENS.

THE bedding arrangements here, taken generally are a decided improvement on those of former years. As hitherto, the chief points of attraction are the series of parallel beds bordering on Park Lane and the semi-circular plot opposite Mr. Chamberlain's lodge in Kensington Gardens. The Park Lane beds are for the most part edged with two or three narrow bands of carpet plants, their centres being filled in with masses of Pelargoniums, Verbenas, Calceolarias, and other flowering bedders. This plan gives a neat finish and considerable convexity to the beds, without rendering it necessary to elevate the soil to any great extent—a system that is apt to prove troublesome by causing excessive dryness during hot weather. The first series of beds on the right are margined with a belt of the deep purple Iresine Lindenii contrasted with the soft yellow Pyrethrum. Those on the left are perhaps even still more effective, the margins here being composed of three rows instead of two. Blue Lobelia alternating with white variegated Poa trivialis, makes a bright and telling line, as also does Alternanthera amabilis, the outside edge being Echeveria secunda. The second bed here, on the right of the flower walk, is filled in with Pelargonium Queen of Queens, mixed with Verbena venosa. This last is an effective arrangement, and forms one of the best bits of harmonious colouring we have seen for some time. Mrs. Pollock and Blue Viola mixed, as seen on the opposite side, is hardly so effective, though, by no means, a bad combination. It is scarcely possible to have too much purple, blue, or white in our flower-beds if bright scarlets and gaudy yellows are used in moderation. For a bright and effective crimson we have nothing better, as yet, than the dwarf and effective Alternanthera amoena. Of all the Zonal Pelargoniums used in these beds, perhaps the pink-flowered Amaranthe is the best, and shows to the most advantage. This appears to be a free-flowering variety, producing a good truss, and makes one of the best beds here on the left. The following bed, also on the left, is composed of a central mass of the dark crimson Coleus Verschaffeltii (improved), surrounded by a row of the golden-leaved Zonal Crystal Palace Gem. Another bed, on the left, filled with Stella variegata and Purple King Verbena mixed is a good and well-arranged group, well worth repeating with the above-named edging. Two other pink-flowered Pelargoniums do well here, Rose Bradwardine and Mrs. C. Custance; the former is a free-flowering variety, and likely to be useful for belts or masses. The scarlets mostly used are Lucius, Wellington, Glow, Stanstead Rival, Bonfire, Warrior, Duchess of Sutherland, and Mrs. J. Lee. The beds in the second series are edged differently from the above, those on the right being formed of a row of dwarf Purple Lantana, not unlike Imperatrice Elizabeth Verbena in appearance, and a dwarf margin of the silvery Antennaria tomentosa. Those on the right side have three rows, composed of Alternanthera, Mesembryanthemum cordifolium variegatum, and Echeveria secunda. This Mesembryanthemum is one of the prettiest edgings that can be used for dark-coloured foliage or flowering plants, and contrasts well with either Iresine or Alternanthera. One bed here of Coleus Verschaffeltii, surrounded by a belt of Centaurea, is very effective, and is margined like the other beds on the right. Pelargonium Louis Roselle makes a bright and telling bed on the right with the same margin. A bed of Centaurea, mixed with Verbena venosa, forms a harmonious mass here, and is neatly margined with Alternanthera and Verbena. A mass of Albion Cliffs, mixed with blue Lobelia, is a nice combination, and is finished off with a carpet margin of Iresine Lindenii, Golden Mesembryanthemum, and Echeveria secunda. In some of the beds west of Grosvenor Gate, blue Lobelias and Golden Feather are used as edging with good effect. An oblong bed, planted with crimson Coleus, is surrounded with a belt of Pelargonium, Crystal Palace Gem, and edged with a row of blue Lobelia and Alternanthera, in the order named. This is a good and telling arrangement, well worth repeating. I here may notice two beds filled in with the old Calceolaria amplexicaulis, one of the clearest and softest of all yellow flowering plants.

The sub-tropical plants at Albert Gate have, to some extent,

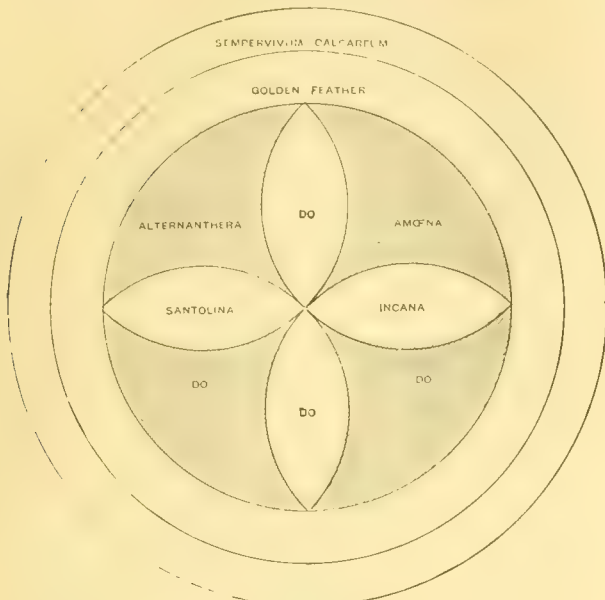
suffered, being in rather an exposed position. They consist of New Zealand Flax, Dracenas, Cycads, Musa Ensete, Chamærops, and other Palms. The long strips of turf on each side Rotten Row are laid out rather irregularly with beds, and these are filled with both sub-tropical and bedding plants in great variety. The clumps of spring Rhododendron and other shrubs being margined with Pelargoniums, Iresine, Lobelias, and Heliotropes. One or two oblong or scroll beds here are planted with a mass of Cannas in the centre, around which is a belt of silvery Centaurea, another of scarlet Pelargoniums, then a band of crimson Alternanthera, the whole finished off with Echeveria secunda. Another bed, similar in shape to the last, has Coleus Verschaffeltii in the centre, bordered with a breadth of Golden Zonal in the way of Crystal Palace Gem, next a row of Alternanthera, and an edging of Sempervivum calcareum. The silvery Pachyphyton bracteatum is used here for edging, and is well adapted for the purpose, being neat and distinct in habit. I wonder this plant is not more generally used by amateurs, not only for carpet-beds and margins, but as a pot plant, since it is so easily propagated from leaf cuttings. One pleasing feature here is the introduction of Lilies, as L. eximium and varieties of L. speciosum, which are just now highly ornamental in several of the beds and along the borders. One or two Fuchsia beds are very conspicuous, and deserve attention. These plants are just now flowering freely, and being planted on a dense



Bedding in Kensington Gardens.

carpet of foliage-plants and neatly margined with variegated dwarf-growing Fuchsias, and other plants, are highly ornamental. Two or three beds here, in which dark purple-leaved bedders are contrasted with the Golden Abutilon, are worth notice. A heart-shaped bed, formed of Coleus Verschaffeltii and Golden Abutilon, margined with belts of Poa trivialis var. and Alternanthera is very bright and distinct, the whole being neatly finished with a row of Echeveria (secunda) glauca. One or two other attractive beds may be noticed here, but nothing can compare with the little garden fronting Mr. Chamberlain's house in Kensington Gardens. This is not only a bright little bit of carpet bedding, but also instructive in an eminent degree, as showing the effect of a judicious combination of foliage and sub-tropical plants along with "bedders." This little flower-garden is semi-circular, the outside being circumscribed by a neat panel border 4 or 5 feet wide. This is very effectively planted. It is margined on each side with rows of Santolina incana, Mesembryanthemum cordifolium var. finished off with a row of Echeveria secunda. The belts which divide the border into panels are planted with Alternanthera amabilis, a bright glowing red kind, with a dense habit. The lozenge-shaped panels are planted with the Golden Pyrethrum, in the centre of which are small squares divided diagonally, one-half being planted with Lobelia pumila grandiflora or Santolina incana, and the other with Alternanthera amoena, a richly-coloured variety of the deepest carmine tint. The triangular spaces on each side are filled

with the silvery *Antennaria tomentosa*, which is one of the best silvery plants we have for dense carpet bedding. The *Santolina* is nearly hardy and very dressy for lines, as it requires but little attention to keep it in form. When contrasted with deep purple *Iresine*, or *Coleus*, or with crimson *Alternanthera*, it has a pale blue tint, and, from the ease with



Bedding in Kensington Gardens.

which it is propagated and kept through the winter, ought to be largely used. The central bed in this group is planted with crimson *Alternanthera amœna*, the cross in the centre having been in the first instance planted with *Lobelia pumila grandiflora* and *Santolina incana*. This is a striking arrangement, and the belt of *Golden Feather* with which it is surrounded



Bedding in Kensington Gardens.

adds considerably to the effect, the whole being neatly finished with *Echeveria secunda*. On each side this are a pair of round beds, planted in the centre with *Coleus Verschaffeltii* (improved), surrounded with belts of *Golden Feather*, crimson *Alternanthera*, *Santolina*, *Lobelia pumila*, and a row of *Echeveria* to finish up with. This *Coleus* is a decided advance on the old variety, and is wonderfully bright when contrasted with *Golden*

Feather or *Mesembryanthemum*. Four heart-shaped beds here are worth notice; two of them are planted with golden *Tricolors*, and two with silver *Zonals* mixed with blue *Viola*, a happy and pleasing combination much used this season instead of self-coloured masses. These are margined with belts of purple *Alternanthera*, *Santolina*, and an edging of *Sempervivum (calcarum) californicum*. There are several other beds, but these are the most effective as here figured. Nice little specimen *Dracenas*, *Palms*, *Yuccas*, and *Grevilleas* are planted out, or isolated on the fresh turf, and the masses of mixed sub-tropicals at each end of the panel border are well worth notice. Milner's tricolor *Fuchsia Sunray* grows well planted out here, and promises to be a decided acquisition for this style of gardening. Much of the effect of this cheerful little garden is derived from the cool masses of *Ivy* and sub-tropicals with which it is furnished, and which form a fresh green background to the whole. Most of the bright and harmonious colouring in this little plot is derived from the employment of *Alternantheras*, *Coleus*, *Golden Feather*, *Mesembryanthemum*, *Santolina*, and *Antennaria*, with the addition of very few flowering bedders. This system has at least one good point—it is always the same, and no amount of rain or stormy weather affects it as is the case where masses of flowering *Pelargoniums* are used—indeed, a few showers seem but to render the plants brighter and cleaner than they were before. There are about eight thousand plants used in this plot alone, and it is daily visited by hundreds, who evidently appreciate this pleasant bit of colouring at its true worth.

F. W. B.

THE BEST BEDDING LOBELIAS.

Now that the season is drawing to a close, it would be well if gardeners would record their experience in regard to such bedding-out plants as have succeeded with them best. In glancing over many gardens during the summer I have kept a look-out for *Lobelias*, and have marked their various qualities. I observe that the old *L. speciosa*, bright blue, is still in favour in the North of England. This and *albo-cærulea*, which is a lighter shade of blue, are the best, I think, in this section. In the dwarf group *L. pumila grandiflora* is an excellent bedder. This, also, is bright blue. The white varieties are not, I find, favourites, though they may be occasionally found interspersed in beds to produce variety. Among these *compacta-alba*, and another called *White Pearl*, are the best, the latter not so good as the former. Purple varieties are not so numerous as blue kinds; undoubtedly the best among them is the one known by the name of *Prince*. Another of a lilac tint, too, cannot be too highly spoken of; its name is *Omen*. To recapitulate, the following are the best, with which I am acquainted, for bedding purposes, viz.:—

Compacta-alba.—White; a profuse bloomer, dense and bushy in habit.

Prince.—Purple; a good well-marked variety.

Omen.—Lilac; not so compact as the last.

Pumila grandiflora.—Deep blue; dwarf in habit, and a free bloomer.

Albo-cærulea.—Bright blue; pretty in large tufts.

Mazarine blue.—Light blue; ought to be grown with white.

Speciosa.—Bright blue; the best of all for small gardens.

JAMES F. ROBINSON.

Culture of *Cystopteris montana*.—Many seem to think it a difficult matter to cultivate this Fern in the open air, or in the hardy Fernery, and for some years I have been of the same opinion. The first small plant I had in my hands I placed in a mixture of peat and silver sand, but somehow it did not succeed; it lived for a year or two, during which it sent up a few sickly dwarf fronds; then it died altogether. Afterwards a friend presented me with a small specimen, which I treated somewhat differently from my first plant. I planted it in cocoa-nut refuse, mingled with a little loam, in a large-sized pot half-filled with broken crocks and stones. When it showed symptoms of life I plunged the pot in a shady part of the Fernery where sunlight never reached it, and it succeeded admirably. In planting all our native Ferns, having creeping rhizomes, care must be taken not to place the rhizome beneath the soil. I have always succeeded best with them when they were about level with the surface, and simply covered over with a little damp Moss. It should be borne in mind that cocoa-nut refuse and cocoa-nut fibre are not one and the

same thing. I am afraid the latter is often sold under the name of cocoa-nut refuse; but the fibre is almost worthless for gardening purposes. Cocoa refuse is sufficiently cheap for gardeners and nurserymen to secure a large quantity; it certainly improves by keeping, and should never be employed in the Fernery until it is at least twelve months old. Those who grow the *Cystopteris* have one enemy with which to contend; that is, if the plants are not carefully guarded, the young fronds especially will speedily disappear, being greedily eaten by snails.—JAS. F. ROBINSON.

Extraordinary Hydrangeas.—I was staying at Pendine, a small village on Carmarthen Bay, about ten miles from Tenby, a few days ago, and saw there two of the finest *Hydrangeas* it has ever been my good fortune to see. They were growing in a small garden belonging to Mr. Morris, better known, perhaps, as the Bard of Morfabychan. They each measured 30 feet in circumference, 6 feet high, and were literally laden with truly magnificent blossoms. I counted six hundred fully-expanded heads of bloom upon the two plants, and there were many more in a younger state. They were perfect specimens, the flowers being evenly distributed over the plants. The soil (about 18 inches in depth), is formed by the disintegration of red ragstone and limestone (the garden being at the foot of a mountain), below which occurs the solid rock. The aspect is south-east, and quite open to the sea.—CHARLES DENNIS, *Southwark Park*.

Plumbago Capensis.—I have tried this for several years in the flower-garden (in West Middlesex), chiefly as a carpeting plant, under Palms, Acacias, and similar tall, but not dense-growing, plants, and I have invariably found it to grow famously, but not to flower well. For a time I attributed this paucity of bloom to the variableness of the weather; but last year I substituted *Lobelias* and *Sedum* spectabile for the *Plumbago*; the former afforded me plenty of flowers, and the latter a turfy verdure, until the middle of July. I then lifted and discarded the *Lobelias*, and lifted and potted the *Sedums*, and transplanted into their places young plants of *Plumbago Capensis* that I had previously grown in a cool airy greenhouse, and which were well supplied with flower-spikes. The result was, that I had fine blooming plants of *Sedum spectabile* in my greenhouse in August and September, and, at the same time, a sea of azure in my flower-garden, until the chilly nights of October put an end to the existence of the *Plumbago*.—J. A. R.

Ageratum Imperial Dwarf.—Until this season this popular bedding plant has somewhat disappointed me, being uncertain as regards habit and duration of bloom; but all through this year, and at the present time, it is flowering most profusely, and correctly maintaining its dwarf compact habit. When in this condition it is one of the most charmingly effective flowering plants with which I am acquainted, and it is doubly valuable now when the *Verbena* is so generally subject to disease. The cheerful azure-blue of the *Ageratum* fills up the gap very efficiently, and, as a band or second-row plant, it is most appropriate, furnishing a very beautiful contrast to scarlet, yellow, or white. It is worthy of note that in taking cuttings they should be selected from plants that have a dense habit, for, except this is attended to, they are certain to prove very uncertain as to height. The true "strain" yields cuttings but sparingly after flowering; therefore it is best to cut a few plants over for the purpose of producing cuttings.—G. WESTLAND, *The Gardens, Witley Court*.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Chamapence diacantha.—This is a welcome addition to our flower-gardens, for not only does it grow and flourish in them remarkably well, but when studded in carpet beds its soft-silvery leaves have a fine effect, even amongst brilliant *Alternantheras*, and other colour-leaved plants of that kind.

The Manetti Rose Stocks.—I have just now a fine row of this stock, and should feel obliged by some of your Rose-growing readers telling me the best time for lifting and potting it, also the best time for grafting for forcing in pots.—R. G.

Anemone Japonica. Honorine Jobert.—This is one of our best autumn-flowering hardy herbaceous plants, and its large pure white flowers are very useful in a cut state. When taken up out of the ground and potted, it is also very serviceable in the conservatory. For this purpose it wants a good soaking of water, and to be put in the shade for a few days.—R. H. B.

Zephyranthes carinatus.—This and its pure white congener *Z. candidus*, are now flowering freely in open borders. It has grassy foliage a foot long, and bears delicate pink flowers on scapes nearly as long as the foliage. When grown in warm sheltered positions as, for instance, at the base of a south wall, these *Zephyranthes* form pretty additions to our list of hardy autumnal bulbs. One species is called the West Wind Flower, and is commonly met with growing in the gardens of Ceylon, as margins to walks and beds.

Hardiness of Calla aethiopica.—In the spring of 1872 I planted two large plants of this in a pond, where they now remain, and they have flowered profusely during the summer, and I may mention that they were frozen over several times. The pond is about 3 feet deep in winter, and about a foot deep in summer; they were planted rather at the side than in the middle; they were grown in large pots previously to being planted out, and were merely turned out of the pots into the water.—D. S. GILLET, *Court Gardens, Great Marlow*.

THE FRUIT GARDEN.

THE ORCHARD HOUSE.

By PETER GRIEVE, CULFORD GARDENS.

(Continued from p. 217.)

Peaches and Nectarines.

THE Peach, and its smooth variety, the Nectarine, were introduced into this country about the year 1562. They are, no doubt, in all respects, the trees *par excellence* for the orchard-house, and, in order to extend their season of production as much as possible, it is advisable to cultivate a considerable number of varieties. These may either be planted out in prepared borders or beds of soil, which should be rendered as firm and solid as possible, or they may be grown in 15 or 18-inch pots in soil such as has been already described; firmly potted and occasionally surface-dressed with rich compost, and watered with manure-water. I feel inclined to give a preference to the former system of culture. But it would, perhaps, be the safest, as well as the most satisfactory plan, to practice to some extent both methods. The trees may be trained in the form of pyramids, half standards, or dwarf bushes, but the first-named form is to be preferred. This must be secured by careful pruning, or rather by stopping and pinching the young or maiden trees during the growing season, so that very little winter pruning will be required during the first two seasons at least. This may be done either early during the month of November, or may be deferred until the following February, and, should the weather at that time be very severe, it may be still further deferred. The spring or late pruning of these trees has the advantage of the bloom or flower-buds being more fully developed, consequently the operator can the more easily distinguish the bloom from the leaf buds. But, generally speaking, there is but little difficulty in doing this, even during the autumn. It will also be understood that in shortening the shoots it is always necessary to cut close to a triple-bud if possible, otherwise, to a single or leaf-bud. The triple-bud consists generally of a wood, or leaf-bud, in the centre, with a bloom-bud on each side. And if a shoot be cut to a single bloom-bud, or to one or more bloom-buds, where the leaf or wood-bud is absent, the shoot must necessarily die down to the next single leaf or triple-bud. As Peach and Nectarine trees are always exceedingly liable to the attacks of insects, such as the green fly, thrips, and red spider, &c., it is consequently always advisable to dress or paint the trees after they have been pruned, with a composition such as has been already recommended, or with a solution of Gishurst's compound, of about the strength of 8 ounces to 1 gallons of water. But, whatever dressing may be used, care must be taken in using the brush, so as to avoid injury to the fruit buds, and this precaution is the more necessary if the pruning has been delayed until the spring is somewhat advanced, and the buds are beginning to swell.

As soon as the fruit is fairly set, a system of syringing must be commenced, and this, it will be necessary, in most cases, to continue until the fruit begins to approach a state of ripeness. The fruit should be thinned out to some extent as soon as it attains the size of small Peas, and should again be examined at a later period, and further thinned should this be found necessary; and if, in any case, any tree or trees in pots may have failed to set a crop of fruit by the beginning of July, they may, with advantage, be placed for a time in the open air, together with a few trees of any variety, which it may be desired to retard in ripening. This will give additional space to planted out trees, and others which may require the same. Indeed all trees in pots may, with great advantage, be placed for a time in the open air after their fruit has been gathered. It may hardly be necessary to say that Peaches and Nectarines at all seasons, when the weather is mild, require free ventilation. After the beginning of July, air should be admitted at night as well as during the day, unless it be during the prevalence of high and boisterous winds. It has already been said that the Peach and Nectarine season may be very considerably prolonged by the judicious selection of varieties. The following list has consequently been divided into three distinct sections, that is to say into early, medium, and late:—

EARLY PEACHES.

- Early Beatrice*.—Said to be the earliest of all Peaches.
Early Louise.—An early and good sort.
Early Rivers Peach.—A good early sort.
Rivers's Early York.—Good and early.
Acton Scot.—An excellent early Peach.
Crawford's Early Peach.—The finest of the yellow-fleshed sorts; possessing a peculiar aroma.
Early Albert.—A richly-flavoured fruit.
Early Admirable.—One of the best early Peaches.
- PEACHES, MEDIUM AS TO THEIR TIME OF RIPENING.
Dr. Hogg.—Hardy, vigorous, and prolific; fine flavoured.
Royal George.—A well-known good variety.
Grosse Mignonne.—Large and fine.
Belle de Croix.—A very large and fine sort.
Stirling Castle.—A very fine new sort.
Noblesse.—One of the best of Peaches.
Lord Palmerston.—New and good variety.
Prince of Wales.—New and one of the best.

LATE PEACHES.

- Salway*.—Flesh of deep orange colour; very fine.
Barrington.—Hardy, handsome, and good.
Bellegarde.—A fine handsome sort.
Walburton Admirable.—An excellent variety.
Violette Hâtive.—A handsome sort.
Galande.—An excellent variety.
Chancellor.—Large and fine.
Late Admirable.—A good late Peach.

EARLY NECTARINES.

- Balgowan*.—A large and handsome fruit.
Hunt's Tawny.—Early, with yellow flesh.
Murrey.—A very early useful sort.
Violette Hâtive.—One of the very best sorts.
Violette Rouge.—A very fine sort.
Lord Napier.—A new sort, very handsome and finely flavoured.

NECTARINES, MEDIUM AS TO THEIR TIME OF RIPENING.

- Bowden*.—A large, rich, melting sort.
Downton.—A very fine sort.
Etruge.—One of the very best sorts.
Impératrice.—Large, juicy, and good.
Pitmaston Orange.—A first-rate yellow-fleshed sort.
Prince of Wales.—A fine new sort.
Rivers's Orange.—Fine flavoured and productive.
Old White.—A very distinct variety.

LATE NECTARINES.

- Oldenburgh*.—Will hang long upon the tree.
Victoria.—A fine variety.

AN INDIAN BIRD SCARER.

THE accompanying illustration represents one of the most effective and least objectionable contrivances I ever met with



for keeping birds from fruit. The sketch almost explains itself—an empty bottle suspended from a pliant branch or twig, the bottom being cut off by drawing a heated wire round

from a file mark; the suspending string passing through the cork terminates in a nail, button, or pebble, which thus becomes the tinkler or clapper of a bell which the slightest breeze sets and keeps in motion. If the suspension of the bottle is effected by means of wire instead of twine, the effect is much better. Twine is too limp; wire or watch-spring gives a sort of rigid elasticity. The inventor was a poor Koonbee far away in an Indian jungle. I am not aware that he ever patented his invention, or reaped any reward, beyond the remarkable efficiency of the contrivance in protecting his crops, and the concession of all the bottles emptied in my camp.

Headingley, Leeds.

WASHINGTON TEASDALE.

FRUIT HOUSES AT RABY CASTLE.

I SAW here the other day a few ripe Pine Apples on plants in pots, one of which, a Providence, measured 24 inches in circumference, and must have weighed about 11 lbs. The conservatory here is a fine building; it is 82 feet in length, 22 feet 6 inches in width, and 15 or 16 feet in height. It contains some ten large Orange trees in robust health, and the full height of the house. On the roof *Mandevilla suaveolens* and *Plumbago capensis* are both flowering freely. Suspended baskets, containing various Geraniums and *Sedum Sieboldii* are at present striking objects; the tricolor ivy-leaved kind streaming down over the edges. *Lapageria rosea* covers one end of this house, and is always in flower. The forcing houses are especially well worth inspection. The Victoria Nectarine looks as if it would prove to be a first-class variety. The Stanwick is bearing a good crop, which will doubtless ripen well if the trees get little or no water. The Raby Fig tree occupies a lean-to house here, 50 feet in length, and generally bears heavy crops. What is called the second Peach-house is 66 feet in length, and about 16 feet in width. Its roof trellis is covered with Plums, of which there is an admirable crop, especially of Golden Drop, Goliath, Green Gage, and Washington. On the back wall were good crops of Peaches and Nectarines. By cutting back a healthy tree of the Barrington Peach, and budding upon it the Prince of Wales Nectarine, a fine example (12 feet high, and as much wide) of this fine variety has been secured, and it is bearing a good crop of fruit. In the early Peach-house the crop has been gathered, and the trees are ripening their wood. The soil in which they are growing was procured from an upland valley, into which a fine alluvial soil had been driven down from the hills above by the rains, and washed comparatively free from all extraneous matter. This, pure and simple to the depth of nearly 3 feet, forms the Peach tree border. The trees are found to make plenty of fibre in it, and, when first planted, gross wood was checked by lifting and root-pruning, and now there is nothing but fruit-bearing shoots left all over the house. This border, assisted with two or three good soakings of liquid manure during the season, is all that is necessary to furnish the fine fruits produced at Raby. Attention is paid to have a dry atmosphere during the setting period, but at other seasons water is given freely even up to the time of ripening. Ventilation is always given, night and day, to suit the out-door temperature, cold cutting draughts being guarded against. Close at hand is a Vinery 70 feet in length, in which the Vines are four years old, and in prime health, the bunches being excellent, and the berries highly coloured. Here are grown Bowood Muscats, Buckland Sweetwater, and Black Hamburgh; the crop is good and evenly distributed over the house, and no doubt the sorts just named will make a good appearance at the Bishop Auckland show, which takes place in the latter part of this month. Passing a succession of Pine pits, 40 feet by 12, in which the plants are clean and healthy, short and stocky as they ought to be, we come to the fruiting-house. This is 47 feet in length, and 18 feet in width. Here, plunged in a pit, over an air chamber, which can be warmed to any reasonable extent, may be seen a fine stock of fruiting Pines, which, when ripe, may average about 4 lbs. each. On the roof at the back, Cucumbers and Melons are grown in a well-built brick trough, the bottom heat being supplied by means of plenty of hot-water pipes. Here too, when necessary, the early crops of Grapes are grown. The kinds of Pine Apples chiefly grown at Raby are the smooth Cayenne and Charlotte Rothschild.

Many are the Melon and Cucumber beds made up here during the season; and, as to kinds, the Raby Hybrid Melon is extensively grown. It has a good constitution, is a free bearer, and excellent in flavour. We come now to a long narrow close pit, having a rubble chamber, in which are hot-water pipes, covered with half-decayed leaves. This is the first succession Pine pit. In this the crop of Pines is first grown, and its usefulness may be understood when I say that it is considered to be indispensable. A short walk and we are at the celebrated range of Vineries; their total length is 160 feet by 19 feet, and they are in four divisions. The first we enter is all that remains of the original Vines. The crop is now cut, and the foliage nearly gone. In the second division there are fine healthy young Vines with a good crop, evenly distributed over the house. Muscat Hamburgs are hanging over our heads in perfection, showing large bunches, and even good-sized well-coloured berries. Lady Downes and Black Hamburgs are all good. This was the first house taken in hand by Mr. Wescott eight years ago. The third division is planted wholly with Muscats; the Vines have good short-jointed wood, and some excellent Grapes hanging from them. The fourth division contains a mixed collection of the most approved varieties. These young Vines are a credit to the establishment, and will, there can be no doubt, continue to improve. We are now on a subject that has been often debated, and we refer to our rather lengthy notes for evidence that we are right in what we now say of the Raby Vine borders. In removing the old borders the soil was found to be black, soft, and cut like soap, now and then a shank-bone intervening, while the skulls of deer were numerous. The depth of the back was 4 feet, and in front 3 feet; the bottom was well concreted, but with very imperfect drainage; and here, without doubt, lay the foundation of all the mischief—a sad oversight, and one not easily accounted for by those who knew the late Mr. Roberts. In making the new borders, about 1 foot of broken brick was placed upon the concrete; a drain was made along the front, and every facility furnished for carrying off superfluous water. The border was formed in parts of about 4 feet at a time. The soil consisted of turf from a very old pasture, cut about 2 inches thick, stacked for six months, and then taken down for use; this was mixed with one-third limestone scrapings from the roads. These limestone road scrapings, when laid up for a year and turned over frequently, become free, sharp, fine decomposed soil, just such as is required for supplying wholesome nutriment to the root-fibres. This is the source from which come that fine bloom and large well-finished berry so prominent a feature of the Raby Grapes—a small proportion of charcoal and lime-rubbish is added to the above, and these form the composition of the borders. The young reader will not fail to mark the difference between the Peach and the Vine borders. In the Peach border there is a degree of consistency, and I shall add poverty, incompatible with the Vine, the soil in the border for which is free, open, and rich.

JOHN RICHARDSON.

Green Park, Darlington.

EARLY PEARS.

WE have received from Mr. Scott, of Merriott Nurseries, Crewkerne, Somerset, some fine early autumn Pears from his unique collection, of which the following are descriptions:—

Beurre Giffard.—A first-class early Pear quite ripe, and of more than medium size. In shape it is bluntly pyriform, with an open eye set in a hollow basin, the fruit being supported by a slender stalk about an inch in length, and inserted obliquely on the end of the fruit. The skin is greenish-yellow, mottled with pale red on the sunny side; and the flesh is white, melting, juicy, and aromatic. Of this we have specimens both from Merriott and from Jersey, the latter, as might be expected, much larger and rather earlier than the English-grown fruit. Mr. Scott says that the Beurre Giffard does well on the Quince, and forms a good pyramid for a small garden; but that the birds are particularly fond of the fruit.

Precoce Goubalt.—This is of a roundish or roundish-turbinate form; smooth, even, and regular in outline, varying considerably in size. The eye is of medium size, closed, and set in a wide saucer-like basin; and the stalk is thin, about an inch in length, and slightly bent, and set upright in a small narrow cavity. The skin is pale green, covered with irregular-sized fawn-coloured dots, and a few

tracings of russet on the sunny side, and a small patch of the same about the eye and stalk. Mr. Scott says that it is an abundant bearer, but not a very good fruit, and does not deserve to be much cultivated if it comes no better than it has this year. He adds that one fruit of André Desporte is worth a basketful of such sorts as Précoce Goubalt, and it is quite as free a bearer.

Supreme de Quimper.—A medium-sized Pear, of good quality, of a blunt pyriform shape, with an open or half-closed eye set in a hollow basin, and having a short stalk set obliquely on the end of the fruit by a slight lip. The skin is of a clear yellow colour, somewhat speckled and netted with russet, and richly shaded with red on the sunny side. The flesh is whitish, melting, juicy, sweet, and perfumed; and, in order to have the fruit in good condition, it should be gathered some time before being ripe, otherwise it becomes mealy and dry.

Petite Marguerite.—This is one of the prettiest and most delicious of early Pears, rather under medium size, having one side larger than the other, and being of a turbinate and irregular ventricose shape. The eye is small, half or nearly altogether shut and slightly sunk, and the stalk is short, strong, and obliquely inserted in a slight plaited basin. The skin is of a grass-green colour, dotted with grey, brown, and rich vermilion on the sunny side, with a patch of russet about the stalk. The flesh is yellowish-white, fine, and very melting, and, if gathered before being ripe, very juicy; indeed this Pear should be eaten before it gets very ripe because it is apt to get dry, but if taken in time it is of honied sweetness. Mr. Scott received the first plants of this Pear tree from the raiser M. Leroy, of Angers, in 1865, and it first ripened its fruit in the Merriott Nurseries, on Aug. 18, 1869. It is a prolific variety, and grows freely on the Quince.

Coq.—A goodly-sized fruit of ordinary quality, of a pyriform and irregular form. The eye is small, round, and slightly sunk, and the stalk is long, thick, knotted, waved, and swollen at the base. The skin is thin, Citron-yellow, dotted and spotted with deep grey especially around the stalk, and shaded with brilliant carmine on the sunny side. The flesh is white, fine, and half-melting, and the juice very sweet and sugary, but without much perfume. Mr. Scott finds this variety to grow freely on the Quince, and to form good pyramids. In Normandy there is a perry Pear quite distinct from this called De Coq, and there is also another small and distinct Pear of the same name grown in Belgium.

Belle de Guasco.—This is one of the most beautiful of early Pears, but scarcely worth cultivating for its fruit. It is of medium size, of a regular pyriform shape, with a large open and hardly-sunk eye, and with a long curved stalk, swollen at the point, and set nearly level by a large nipple. The skin is Citron-yellow, greenish on the shaded side, and of a beautiful vermilion colour dotted with russet on the sunny side. The flesh is white, firm, and melting, and the juice is very abundant, vinous, and acid—indeed, to some palates, it is too astringent.

Alexandrina Bivort.—This is a moderately large Pear, and of good quality. It is roundish, ovate, or Doyenné-shaped, having a small open eye with broad segments, set in a plaited basin, and a slender stalk over an inch in length, and which is curved and fleshy at the end next the fruit. The skin is smooth, bright green, and irregularly covered with small russet dots, and a faint reddish tinge on the sunny side. The flesh is finely grained, melting, very juicy, sugary, rich, and perfumed; and, to have the fruits in perfection, they must be gathered before they are ripe. Mr. Scott says that the tree is a great bearer, and that it succeeds very well upon the Quince.

Guenette.—This is a very old Pear, which has been in cultivation since 1650, and is sold in considerable quantities in the Paris markets under various names, and also largely in the Weymouth market under the name of Green Junnetting. It is sometimes confounded with the Green Chisel, but it differs from that sort in being more pyriform, the eye open, and the stalk placed in continuation of the fruit; besides, when ripe, it is a richer and more buttery fruit. The Guenette, however, is a very small Pear of second-rate quality, and of a roundish-turbinate form. The eye is large, half closed or open, with a few protuberances around it, and the stalk is long, straight, and inserted without depression. The skin is green, with a slight brownish tinge next the sun; the flesh is white, juicy, and sugary.

Raising Strawberries from Seed.—Will you kindly tell me the best way of removing the seeds from the berries, and the proper time for sowing them.—J. L. G. [If a small number of seeds only is required, they may be picked from the surface of the berry with the point of a knife, spreading a sheet of paper below to catch them as they fall. If, however, the quantity required is large, the berries should be put into water and washed until the seeds are separated from the pulp, when the little that adheres to them can be removed by rubbing or drying them in a smooth towel. When the seed is washed, care must be taken to dry it well, as it is apt to get mouldy. We should advise you to sow it early in the spring, or even now if convenient, in boxes of light earth, placing them on a sunny shelf in a cold house or pit during the winter months.]

GARDENS OF STONEWORK.

THOSE who have devoted much time and attention in examining many of the best geometrical gardens of Italy, have found them barren of interest from a gardening point of view, in direct proportion to the predominance of their artificial embellishments. The great defect of the Italian style of ornamental gardening is the marked absence of natural grace and beauty which is the necessary result of the system. And it can hardly be otherwise; for, if a given space is occupied chiefly with a mixture of colonnades, flights of stone steps, paved terraces, balustrades, turrets, fountains, statues, and vases, the effect, whatever may be its merits as a display of sculpture and architecture, must be of a very different character from that presented by a varied assemblage of natural objects, and must necessarily be more or less devoid of the peculiar charm and interest produced by a judicious disposition of trees, and shrubs,

convinced that it is in every way an error of judgment to expend large sums of money in architectural gardening. Our illustration represents a portion of the gardens of the Villa Albani-Castlebarco, in which an abundance of heterogeneous statuary and broad cold masses of stonework contrast painfully with the few specimens of vegetation that are visible. The general effect is not much superior to, and not much unlike, that of Trafalgar Square when it rejoices in its summer decoration of tubbed Bay-trees. Some of the old Italian gardens are far more beautiful in their decay than ever they were in their prime, from the simple fact that the mouldering stonework of their terraces, &c., has become covered and draped with a natural vegetation which has sprung up among the unheeded ruins. The old garden at Pisa is one of the best examples of this "loveliness in death," this beauty of decay, which finds its expression in the Italian



A Garden of Stonework: the Villa Albani-Castlebarco.

and flowers. In gardens laid out in the natural style time is always a great improver. The trees go on for years increasing in stature and stately grace; the shrubs acquire a denser foliage and a broader outline; while the humbler plants and herbs, year after year, spread more widely, and cover the surface with a rich, mantle of verdure. In the purely architectural garden we have the reverse of all this. In a few years the weather does not fail to tell upon the balustrades, and the fountains, and the statues, and a dismal picture of ever-increasing decay (rendered only more evident by any attempt at mending or plastering up) is the main result of the labour, time, and money expended in their erection. We need only visit some parts of the grounds of the Crystal Palace, and behold certain structures there, first conceived and executed not many years since, but now in an advanced stage of dilapidation, to be

word *morbidezza*; but many of these stone-work gardens in Italy and France which, although equally in ruins, are not similarly shrouded with vegetation, are bare, harsh, and repulsive in aspect.

W. M.

Flower-Culture, and its Sanitary Results.—The more we know about that seemingly mysterious product, ozone, the stronger evidence do we obtain that it has much to do with the changes in human health, noticeable in different localities, and at various seasons. Hence the cultivation of many shrubs and plants, besides its economical or æsthetic value, has an agency connected with hygiene; for Professor Mantegazzi has demonstrated that a great many species grown in gardens produce much ozone, not only under the influence of the sun's rays, but even after dusk. He has named amongst plants of utility in this way, Lavender, Cherry-Laurel, Thyme, Narcisse, and Mignonette.

ON THE MANAGEMENT OF PONDS AND WELLS.

By R. ORLEBAR.

ONE cubic inch of rain represents a fall of 100 tons of water per acre! So says that most accurate of calculators, the Registrar-General; and the calculation is easy of proof. Now the average annual rainfall of England varies from about 20 or 25 inches on the east coast, to 40, 60, and 80, or even more, on the hills and on the west coast. Supposing that we take 30 inches as the average, we find that 3,000 tons, equal in round numbers to about 13,000 hogsheads of water, are showered down for every acre of England, at some time or other in the course of the twelve months.* Yet all England has, so to speak, been starved for want of water. Most incumbent is it, then, upon every thoughtful man to try and remedy the waste which evidently must occur somewhere; and to inquire how the bountiful supply from the skies may be best husbanded against a period of necessity. In cities and large towns the demand for water—the most important, perhaps, of all the commodities of life—is such, that even a slight deficiency in the usual supply causes so great an inconvenience to all classes, that a remedy more or less expensive is sure to be applied almost as soon as the want has made itself known. But in rural parishes, the case is very different; and there are two main reasons why this is so. One, and probably the chief, is their poverty and general inability to carry out, unaided, any great enterprise; while the other is the apparent mental apathy of men bred and born in the country as compared with the inhabitants of towns, whose energies are daily and hourly rubbed up and sharpened, as it were, by intercourse with their fellows. Most of us who live in rural parishes, are more or less dependent upon agriculture for our daily bread and daily occupation; and agriculture in its turn is so dependent upon seasons and the weather, that we country people are too apt to imagine that other things are equally dependent upon the same source; we think what is to be is to be; and so, resigning ourselves to our fate, we often overlook a remedy which really lies within our own power.

It is clear from the above-quoted statement of the Registrar-General, that there can be but few parishes in England in which, supposing that there was no waste, sufficient rain does not fall to provide an ample supply of water for all agricultural and domestic purposes. Our inquiry, then, should rather be directed towards the ascertainment of the best means of storing up our supply, than of increasing it or creating a new one. It is not my present purpose to trace the origin and extent of that great fresh-water ocean which is beneath our feet, or to treat of springs—the overflowing of that vast bed of water, but rather to inquire how a sufficient supply of water may be obtained and kept in those places where the springs are too deep to be easily or cheaply available. This must be done by means of ponds or wells, open or covered reservoirs. First, then, let us inquire as to ponds. Most rural parishes have some of these about the farms or close to the villages. But of what sort are they, in what situations, and how are they treated? Too often they are but wide shallow pools, giving off plenty of damp and fog in winter, while in summer they are perhaps quite dry, or at best contain but a few inches of clear water above a deep bed of slush and mud. The deepest part of the pond is almost invariably the farthest from the mouth, consequently, when cattle go to drink, they trample further and further into the mud, as the water recedes before them, and the mud consumes almost as much, if not more, than the cattle themselves. Every pond should have a mouth, if only for the convenience of cleaning it out; but most assuredly that part which is nearest to the mouth should be the deepest; and I would have the whole pond so constructed, with a regular slope from every part towards the mouth, that the last cupful should be found there. Those who resort so it, be they men or cattle, would then have the water always fresh and clean, and there would be no occasion for them ever to advance into the pond beyond the mouth. Lest, however, cattle should be tempted by the heat of the weather to bathe or stand in the pond, I consider it very important that a line of posts and rails should be erected across the pond, just in front of the mouth. The mouth itself should be a gradual slope from the surface of the ground down to the level of the bottom of the pond; and it is only true economy to pave or pitch it, so that the cattle may stand on a hard bottom. This pitching should be of good sound flattish stones, set up edgewise, and filled in with sand and lime. Pebbles and round stones do not answer, as they are very slippery for stock to stand on, besides being liable to get kicked up, and moved from their places. The bottom course should be a good piece of Oak timber, well pegged down to two or three stout piles, to prevent the rest of the pitching from slipping by degrees into the

pond. This pitching would be of great help, too, in case of its being necessary at any time to send a cart down for water. For my own part, however, I should say that, never on any pretext, should a water-cart be sent down the mouth; but I would use a small hand or garden pump, and, by means of two short pieces of hose, pump the water into the cart while standing on the level; for I am convinced that by this means, much waste both of water and labour would be avoided, besides wear and tear of horseflesh, and damage to the pond.

I would next call attention to the very great importance of making ponds sufficiently deep. Many ponds will hold water throughout an ordinary summer; but directly that an unusual drought comes, and the want of water is really felt, it may be said without exaggeration that four ponds out of five are suddenly found to be dry. Whatever may be the superficial size, there should be a minimum depth of not less than 6 or 8 feet at the mouth, which is, as I said before, to be the deepest part. By every additional inch or foot in depth, a great hoard of water is most economically stored up; for a small, deep pond has three great advantages over a larger and shallower one. In the first place it occupies less space; secondly, it loses less in proportion by evaporation, from its smaller surface; while thirdly, when the water gets low, that which remains is effectually shaded by the high banks. This mention of shade brings me to another important item in the design of a pond. It is astonishing what an effect a little shade has in checking evaporation. A pond that is well shaded will hold water for weeks after one of equal dimensions, but lacking shade, has become dry. Yet how recklessly this very summer have I seen men cutting up every bush and tree round the banks of their ponds. True, a few leaves may drop into the water; but if the pond-owner will only take the trouble to observe the marvellous tenacity of a thoroughly saturated leaf, he will, I am sure, be soon convinced that many an autumn must pass away ere the accumulation of leaves which may *drop** into his pond can do him any harm. Always therefore, if possible, have the mouth of your pond on the north side, and shade on the south. The best shade is that given by Fir trees, for they give it all the year round. Moreover a less quantity of leaf falls from them than from other trees, and that which does fall, being specifically heavy, falls straight, and is not likely to be blown by the wind when fallen. Neither are the branches of Fir trees as liable as others to die and fall off, unless they are allowed to grow too thick together. It is a maxim among those who cultivate the Fir for its beauty, that no tree of this sort should ever touch its neighbour. At the same time, in exposed situations, they must not be planted in too narrow a belt, or the wind will blow through and stunt them all. It may be as well, too, to remark that the Scotch Fir, from its more hardy habit, is infinitely better adapted for exposure than its more delicate congener, the Spruce. The Yew would, perhaps, be even better for shade than the Fir, but for its poisonous qualities. After the Fir, I doubt whether there is on the whole, any better plant for shade than the Hawthorn bush. Its leaves sprout early, and fall late; and it possesses, besides, the great advantage that it forms its own fence; for it is of great importance that a pond should be fenced, and no access allowed to it except at its appointed mouth, otherwise there will be danger of children and cattle being drowned, to say nothing of banks broken and trodden into the water. I have so far endeavoured to show what I consider to be the proper construction of a pond, where only a single mouth is required. It remains to see what is the best situation for such a pond, and then how far its construction may be modified by its situation.

Our forefathers appear to have adopted the plan, in very many parts of England, of digging their ponds in the middle of the field; and, as a consequence, each farm was provided with almost as many ponds as fields. To their ideas, a pond evidently was a pond, and they fancied that the more ponds they had, the better were they supplied with water. The last two seasons, however, have shown the fallacy of this reasoning, and we have discovered to our cost that the title of pond was too often an empty one. Now-a-days every pole of ground is so much more valuable than it was in the time when these old ponds were dug, that few farmers can afford a pond to every field. It is, therefore, an object to make the same pond serve for two or even four fields. If for the latter, it must of course be in the corners of the fields; and when we reflect on the great and constantly recurring inconvenience arising from a pond in the centre of a ploughed field, it will be seen that, *ceteris paribus*, the corner is the best place for a pond, even where it is required for one field only. It is impossible to plough quite into a corner, therefore the space may as well be occupied by a pond as become a receptacle for weeds and rubbish. In a field of good permanent

* It may of course be objected that a fall of 40 inches in one place does not compensate for one of only 20 inches in another; but I think even the small fall of 20 inches may, with care, be made to provide a supply sufficient for all ordinary occasions.

* The case would of course be very different where a pond is surrounded *all sides* by many trees, or is fed by a ditch or brook which will bring leaves from elsewhere; but then the mischief is caused by the leaves which are blown or brought, not by those which drop into the pond.

pasture, which is never likely to be broken up, there would be, of course, no more land wasted by a pond in the centre than by one in the corner; but my previous remarks upon shade and fences prove, I think, that the corner is, in this case also, the best site. There are several matters, however, besides convenience, which the digger should take into consideration before he commences a new pond. He should ask himself whether, in the first place, the spot selected is likely to gather a sufficient supply of water; and, if so, then whether it is likely to hold what it has gathered?

Now, it is well known to scientific men that a rain-gauge placed upon the ground gathers more water than one raised a few feet from the ground; in fact, that the higher the gauge is placed, the less rain does it gather. The reason of this is that every drop has, in its descent, to pass through a very humid atmosphere, and by the law of attraction is continually aggregating to itself moisture from this atmosphere until it reaches the ground. It is clear, therefore, that the nearer to the clouds each drop is arrested, the smaller in proportion it will be. It follows from this reasoning, that the lowest part of a field will gather the most rain; and if a pond be placed there, drains from the rest of the field can in addition be brought into the pond. Nor, unless the land is very flat, need the waste pipe (which is in effect but a continuation of a drain) be placed quite as low as the supply pipe; for I have often seen water running fast into a pond from a drain whose mouth was considerably below the surface of the water in the pond. At the same time, as the bulk of water in the pond *must* have a tendency to hold back the water in the drain, I dare not recommend that the waste pipe should ever be more than 12 or 18 inches higher than the supply pipe, and then only in cases where the land to be drained is some feet higher than the surface of the pond, otherwise I should be particularly careful to keep a clear fall of some depth below the supply pipe. By thus draining a field into a pond, or, in other words, making a pond at the mouth of a drain, a good supply of water may often be obtained in summer from a thunder-shower, which would otherwise have raised the pond only an inch or two; so that this single advantage often makes a very small pond, or even a good deep hole at a drain's mouth, equivalent to a large pond in a worse situation. Need I remind my readers that rats, rabbits, and foxes are very fond of frequenting drains? Indeed, I once knew a 4-inch pipe between two ponds blocked up by the bodies of two eels which had tried to pass each other in opposite directions. All danger, however, of this sort may be easily avoided by the simple precaution of inserting between the two last pipes of the drain a piece of perforated zinc, or galvanised wire netting of a small mesh. But where the water from a ditch is conducted into a pond, it is very essential to filter it through a strong close wattle, or better, through two, at a distance of a few feet from each other; otherwise the pond will be soon choked up, the ditch proving of more harm than good.

We now come to the second question, viz., is a pond in this lowest part of the field likely to hold water? And here the would-be pond-digger will find a small acquaintance with geology very useful. If he knows what stratum is subjacent to the surface-soil, he can tell to what depth he may safely penetrate. Should the stratum be porous, as sand, gravel, or limestone, he must not dig down to it, for he could never depend upon his pond holding water, except perhaps where the adjoining country is almost a perfect flat; as, for instance, an elevated table-land, or low-lying meadows, where gravel is often a good water-bearing stratum. If, however, there is any fall of the land in the neighbourhood of the pond, a porous sub-stratum will be almost sure to let out the water. It is possible, certainly, so to puddle the bottom and banks with clay that leakage may seldom occur; but the process is costly, besides the constant danger of cracks coming through heat or accidents. Unless, therefore, the pond is likely to hold water in the lowest part of the field, the digger must choose some other spot. And the next best site will, nine times out of ten, be in the highest part; for I have shown already that nearly everywhere in England sufficient rain falls to give directly a fair ordinary supply of water, apart from that which may be derived from drainage. Trusting, then, that his pond will be filled from the skies, let the digger select as flat a place as he can, and this, if not at the lowest, will, I think, be more often found at the highest part of a field than at any intermediate level. Above all things, let him bear in mind that it is almost useless to dig a pond on the side of a hill, where there is anything like a sharp fall below the pond; for the law of gravity will certainly cause the water to ooze out below, unless the subsoil is a regular stiff clay. Such, and indeed most ponds, will hold plenty of water in winter; but our object is to discover one that will not fail in a dry summer.

Let us next briefly consider the third point, namely, the treatment of the pond. The pond is too commonly left to take its chance. When cattle want to drink, they are allowed to go into it as far as

they please; if water from it is wanted for another place, the water-cart is backed down deep into its muddy bosom; and when, at the end of some dry summer, the pond also is found to be dry, a few loads of mud are taken out of that part farthest from the mouth, the sheltering bushes are cut down, and the pond is declared to have been well cleaned out. Such treatment will, no doubt, enable the pond to hold water till the next dry summer comes, when in all probability it will again fail, and the unfortunate proprietor will wonder to himself and complain to his neighbours that he cannot anyhow get his pond to hold water. If, however, anyone will take the trouble to wade through this essay, and adopt the course suggested by it, I can promise him that he may, if he likes, wade also up to his neck in his own pond at the end of the next dry summer, and the expense shall be less, on an average of years, than he is now put to by the constant expense of carting water from a distance, to say nothing of the partial cleanings out, which under the old system occur so frequently. I repeat, then, never on any account allow cattle to go further into the pond than the edge of the pitching in the mouth. To prevent this, it is absolutely necessary to have a line of rails, or a chain, or some such obstacle, across the mouth of the pond. As regards the use of the water-cart, I need only refer to what I have before said on this subject. And, lastly, as regards cleaning out, I maintain that a pond made, placed, and treated as I have recommended, will hardly ever require that process. But if, in the course of thirty or forty years, it should appear to be getting more choked up than is desirable, I would advise the owner, instead of waiting till it dries itself, to take an opportunity (say after harvest) of pumping out the water that may be left. He might then leave it to dry for a few days, and as soon as he begins to clean it out, let him put several hands on at once and get the job done quickly and well, taking care to keep the bottom in its proper shape, and to repair the pitching and rails if necessary. I have known so many instances where a pond has been partly cleaned out, and the remainder of the work stopped and spoilt by a heavy rain, that I wish to urge the advisability of not loitering over such a work. If rain comes on when the mud has been removed from only a part of the pond, the mud in the other part is again floated, and comes back to spread itself over the clean, and so lower part. Where a large pond has to be cleaned out, it is a great help to the men to attach a horse by a long chain to the wheelbarrows. Each wheelbarrow, when loaded, is placed on the plank; the horse draws it up to the tipping-place, where the man tips it, unfastens the chain, and returns on the down plank, the horse also returning for the next load.

I have now exhausted all the suggestions which I have to offer about ponds; but, before quitting the subject, I should like to add a few words as to the great importance and desirability of having a large deep reservoir close to every good homestead. I know of a case where a landlord dug one for his tenant (the latter finding the carting), and the very next year the tenant's stacks were all burnt down by an incendiary, as is supposed; and there is not the slightest doubt but that all the landlord's buildings would also have been consumed if there had not been a copious supply of water from the reservoir, just dug, so close at hand. As it was, the buildings were hardly injured at all. This, of course, is an extreme case; but the value of a good supply of water at the commencement of a fire is almost beyond calculation. In the eastern and midland counties it is generally difficult to get a large natural supply of water at any distance from the villages, which always congregate round the springs. But it is very essential for farm-premises to be as near as possible to the centre of the farm, often many miles away from any stream or spring. A pond, then, or a well, is all that can be looked to for the stock or for fire; and in the latter case a pond is, of the two, decidedly the more useful, as several engines may be fed from it at the same time, leaving plenty of room for labourers to dip their buckets. A deep well is very expensive to dig, besides the risk of not finding water when you have penetrated as far as means or inclination allow; and any well, where the water lies at more than about 26 feet from the surface of the ground, requires a costly pump. I consider, therefore, that for farm buildings, where there is no other supply, the best plan is to make a good wide well (for a pump), about 26 or 28 feet deep, and to dig, a few yards off, a really useful pond. Let all the water from the spouting be conducted into the well, and make a waste pipe from near the top of the well into the pond. Thus, in a dry time, a shower will fill the well first, and the surplus, if any, will be saved in the pond. I will conclude with some remarks on springs and wells in connection with the water supply in rural parishes. A well without a spring is, in reality, only a covered pond, though, being covered, it suffers no loss from evaporation by either sun or wind. In some places a well sunk to a given stratum will be quite sure to find water, while in other localities the springs are so precarious that one well may never fail,

though another, a few yards off, may be worthless. A gentleman of my acquaintance had a tolerably good well, about 25 feet deep, which never failed for many hours together, though it had no great supply. He was wise enough not to tamper with this, but wanting more water, dug another well a few yards off. Having dug down to about 50 feet without finding any water at all, he bored down still deeper, until at last the water rose into the bore with a great rush, and he fancied he was going to have a grand supply. The next morning, however, it had all vanished, and he could never again get any water there. He had, in fact, tapped a spring, which, almost as soon as it was tapped, lost itself again through a vein of sand. Strange to say, the original well was in nowise affected by the new one. But here let me say a word of caution against a deception which I have known to be practised by professional well-borers. At a certain homestead a well was dug down to a limestone rock without finding any water; the borers were then ordered to pierce the rock till they did find water. The men accordingly spent some days at the bottom of the well, and professed to have bored to some unheard-of depth, but without success, and the job was reluctantly given up. For some years the tenant was put to the expense of carting water from a distance almost every day. At last, however, he engaged a man, who had been successful with a deep well in a neighbouring parish, to try and obtain water for him. This man examined the well, and feeling sure that there must be water in the rock, he began to excavate. The work had proceeded very little way before he discovered that the original borers had only penetrated about 2 feet further than the well, though they had been paid for I don't know how many feet. Encouraged by this discovery he renewed his work, and was very soon rewarded by an ample supply of water. We often see springs issuing from the ground and running to waste, spoiling perhaps a considerable piece of ground before their water is collected into a ditch or other channel. If the owner would only take the trouble to follow the spring back into the ground for a few feet, and place in it a draining-tube which should empty into a small tank or tub let into the soil, with a waste pipe at the opposite side, he might have an excellent supply at a minimum of cost; and two loads of stone, placed round the tank to give firmness to the earth, would make it as good a drinking-place as could be desired. Again, in many places a brook, which is often dry or nearly so in summer, may be made to give a certain and ample supply all through the year by erecting sluices across it at intervals; and, though the cost of this is considerable, yet it will often pay, simply by making the brook a good fence instead of a bad one.—*Journal of the Royal Agricultural Society.*

THE ENCLOSURE AROUND ST. PAUL'S.

THE preparations (says the *Times*) for opening this enclosure, and widening the road at that inconvenient turn in a great thoroughfare, are now so far advanced that there seems some hope that they may be completed in a week or two. Good taste would, perhaps, have forbidden the squat posts which stand like a row of capstans along the curve of the new boundary line of the property of the Dean and Chapter; and, if these were inevitable, there is certainly no reason why they should have been made of salmon-coloured granite from the ominous Isle of Mull, or polished to a degree which contrasts painfully with the grimy statue of Queen Anne and the venerable stone of Sir Christopher's work. For all this, however, no improvement more striking will, perhaps, have been effected in the Metropolis by a change so simple—we might have said so cheap, but that the Cathedral authorities, in their zeal for the well-being of the Church, have exacted from the citizens in return for this striking improvement of their own property no less than £15,000, which, however, they promise to devote mainly to decorating the building. But, after all, this sum will be but a trifle to pay for the change, if those who have the power to effect improvements in London will only come and look at the new state of things and profit by the example which it presents. To remove clumsy iron railings and substitute light ones, which neither obstruct the view nor impede the circulation of air; to open spaces, which are now shut up and useless; to convert dismal grave-grounds and sooty nooks into bright and cheerful places, really costs very little. Some of our city parishes have already turned their old grave-grounds into very neat beds of shrubs and flowers. Why, then, should not the Dean and Chapter of St. Paul's take the hint, and now they have reformed one side of their enclosure, turn the large space at the other side into a cheerful garden, with a railing which would not prevent people looking in? Our sooty atmosphere, it is true, is a great enemy to horticulture; but the gardener's occupation is a perpetual struggle with evil influences, and soot, like blight and vermin, can be baffled with a little care. The gardens of the Temple furnish convincing evidence on this point. They have, it is true the great open

space of the Embankment and the river at hand; but let any one who would know the possibilities of town gardening observe the condition of the Grass and flowers in Clement's Inn and New Inn, Strand. The gardener of New Inn would, we believe, be happy to show any person what may be done in the way not merely of exhibiting imported flowers, but of propagating and rearing delicate plants in the very heart of one of the smokiest of all cities.

THE LIBRARY.

THE NEW COOKERY BOOK.*

THIS is a very comprehensive work, containing no fewer than 1,747 receipts, which embrace almost every subject belonging to culinary art, instructions for carving, the choosing of meats, fish, vegetables, &c., and the various preparatory operations of the kitchen. The receipts have the merit (rare in similar works) of stating the exact quantities of the ingredients employed, so that the results in each case may be confidently predicted. Although not coming exactly within our province, we are induced to notice Miss Bowman's book from finding the chapter on the cooking of vegetables, &c., far better done than is usually the case. One error, however, we venture to point out. In speaking of the Potato, the authoress states that "the common people of Ireland, who subsist chiefly on the Potato, *only half boil it*, that they may have the enjoyment of masticating it." [!] This assertion we know to be as untrue as it is amusing. The "common people of Ireland" have long since found out the secret of cooking Potatoes to perfection, and, if they occasionally err in the matter, it is in the direction of over-boiling, as they do not consider them fit to place on the table until they are "laughing in their jackets," *i.e.*, until the skins are well burst in boiling. Should a half-boiled specimen chance to make its appearance in the dish, Paddy invariably rejects it, because, as he says, he doesn't like "a Pratie wid a bone in it."

SMITH'S FRUITS AND FARINACEA.†

THOSE who are interested in the question of Dietetics will find in this little work an ample *résumé* of all that has been hitherto said on the subject of Vegetarianism. The advantages of the system are put forward in a singularly temperate and attractive manner, and the arguments appeal not less to reason than to well-established results. The great difficulty for the advocates of Vegetarianism appears to lie in the breaking through of old habits and prejudices in those whom they desire to convert. The following extract, from many statements of a similar kind, goes far to prove that bodily strength at least is in no wise enfeebled by a purely vegetarian diet:—

The natives of Central Africa, who subsist wholly on vegetable food, possess astonishing bodily powers. "The people of Jenna," says the enterprising Landers, "have abundance of bullocks, pigs, goats, sheep, and poultry; but they prefer vegetable food to animal. Their diet, indeed, is what we should term poor and watery; consisting chiefly of preparations of the Yam, and of Indian Corn; notwithstanding which, a stronger or more athletic race of people is nowhere to be met with. Burdens with them are invariably carried upon the head; and it not unfrequently requires the united strength of three men to lift a calabash of goods from the ground to the shoulders of one; and then, and not till then, does the amazing strength of the African appear. Some of the women that we saw bore burdens on their heads that would tire a mule; and children not more than five or six years old trudged after them with loads that would give a full-grown person in Europe a brain-fever." The Kroomen are a particular race of people, differing entirely from the other African tribes. They inhabit a country called "Setta Krow," on the coast near Cape Palmas. Their principle employment is of a maritime nature. A certain number of these men are always employed on board of the ships of war, on the African coast, for the purpose of performing those duties in which considerable fatigue and exposure to the sun are experienced. They only require a little Palm oil, and a few Yams to eat, and they are always ready to perform any laborious work which may be required of them.

* "The New Cookery Book, a Complete Manual of English and Foreign Cookery." By Anne Bowman. London: George Routledge & Sons.

† "Smith's Fruits and Farinacea." Condensed by F. W. Newman, M.A. London: F. Pitman, Paternoster Row. 1873.

THE INDOOR GARDEN.

ODONTOGLOSSUM ALEXANDRÆ.

It is allowed that this noble Orchid is one of the most beautiful of the genus to which it belongs, but it may not be equally well known that it is as easy to grow, under certain conditions, as a Heath or an Azalea. In one or two places I could name it is cultivated by the hundred, and flowers can be cut from it any day in the year; still the plants are not coddled, and in one instance they are grown by the dozen in an ordinary brick pit, with the lights propped up on fine days, in order to give them an abundant supply of air. Under these conditions they grow freely, and make pseudo-bulbs $4\frac{1}{2}$ inches long, and nearly as thick as one's wrist—great plump bulbs, surmounted by fine bronze-tinted foliage, indicative of the robust constitution infused into them by a moderately cool temperature, abundance of tepid moisture, and full exposure to both light and air. This species does well for a time in a hot temperature, beneath heavy shading, but it certainly does not require stove treatment; indeed, in the long run, the plants are positively injured by it, and do not flower nearly so profusely as those grown in a cooler temperature with plenty of air. It has been called a greenhouse Orchid, but it requires much more humidity in the atmosphere than is accorded to greenhouse plants in general. A house partially sunk below the ground level, or one naturally moist, is well adapted to this and many other "cool Orchids." Under favourable conditions this plant keeps on growing for a considerable portion of the year—indeed, the resting season so necessary to many Orchids from the tropics is, in the case of this *Odontoglossum*, reduced to a minimum, and the plant should on no account be allowed to become thoroughly dry at the root. As regards compost, nothing is better than fresh fibrous peat broken into small lumps with the fingers, the small portions being rejected. To this add about one-fourth of dried horse droppings and a handful or two of leaf-mould. With this mix a little well-washed sand, coarse road or river sand being preferable to white sand, which allows the compost to settle so closely together as to become sour and stagnant. A little chopped Sphagnum is added by some growers. Use small pots, nothing being so fatal to good Orchid growing as over-potting, and see that they are thoroughly well drained with clean crocks. The pots should be about two-thirds full of drainage so as to ensure every facility for the escape of superfluous moisture. In potting, elevate the bases of the bulbs slightly above the rim of the pot, pressing the compost firmly around the fleshy roots without bruising them, and finish off the surface with a layer of fresh living Sphagnum, which should be encouraged to grow as freely as possible. Living Moss suits this and many other cool Orchids well, as it keeps the surface of the compost clean, and the roots in an equable state with respect to moisture. One of the chief charms possessed by this plant is the variableness of its flowers, scarcely any two being exactly

alike. They vary not only in size and form of the segments, but also in colour, some varieties being pure white, while others have their sepals and petals heavily suffused with rosy-lilac, and the sepals and lip variously blotched or spotted with reddish-brown. The accompanying illustration shows the general contour of a medium-sized flower, which is spotted only on the lip, the sepals and petals being perfectly white. The flowers of this species being borne on gracefully-arched spikes, are well adapted for cutting, and form charming natural wreaths, either for the drawing-room vase or for other purposes of indoor decoration, accompanied by such Ferns as *Davallia* or *Adiantum*, the fresh greenness of which relieves and sets off the pearly whiteness of the wax-like blossoms to excellent advantage. B.

Hyacinth Flowers a Second Season.—E. C. Hiscox, writing to the *Florist*, says:—"After Hyacinths have done their duty the first year in greenhouse or conservatory, I take them to that part of the garden where the sun shines all day, and plunge the pots to the

rim in prepared and well-drained materials, mostly coal ashes. I leave them undisturbed till September or October, according to the time I want them to flower, and then take them up, repotting them carefully in good sandy loam. I have adopted this practice for the last two or three years, and have found it to answer well, especially in the case of the single varieties, which succeed best under this treatment. This season I have had the following beautifully in flower, viz.:—Prince Albert Victor, Lord Macaulay, Leonidas, Baron Humboldt, Voltaire, Alida Jacoba, Victor Hugo, Norma, L'Ornement de la Nature, Mont Blanc, and many others having spikes from 6 inches to 8 inches in length."

Spiræa palmata.—

This promises to be a good plant for forcing, and it is beginning to be appreciated as such. As in the case of *Spiræa japonica*, plants of it intended for forcing should be potted in the autumn, about November, and should be

plunged in ashes, or some such raw material, in the open air, and kept sheltered from heavy rains; as soon as the crowns show symptoms of swelling the plants may be removed to a suitable house, and pushed on into growth, increasing the temperature as the time of blooming is approached. I saw last spring some nice dwarf vigorously-grown plants of this *Spiræa* that had been treated in this manner, each bearing five or six spikes of flower. As a matter of course, it will never be got into flower so quickly, or be made to bloom so freely, as *Spiræa japonica*; but it is very charming indeed when its panicles of bright rosy-crimson flowers are fully expanded.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Begonia Brilliant.—This new hybrid is now producing quite a hundred blooms of the brightest carmine colour at Messrs. Veitch's, and some of the flowers measure 2 inches in diameter. It will be useful as a conservatory plant and for cut flowers.—W.

Incrustation of Boilers.—It is stated by M. Austin that glycerine mixed with the water in the boilers of steam-engines prevents the deposition of the lime salts, and, consequently, protects the boilers from incrustation. About one pound of glycerine to every 300 or 400 lb. of coal burnt is said to be sufficient for this purpose.



Odontoglossum Alexandræ.

DRYING FLOWERS IN NATURAL COLOURS.

IN one of the numbers of *THE GARDEN* (see p. 54) I find a notice about drying flowers in natural colours. I have no doubt that the way there recommended, if carefully done, will answer very well for some sorts of flowers; but I have also no doubt that very seldom or never will anybody take so much trouble, and that there are many flowers which never will answer in that way. I cannot, however, understand why the author of that article has never succeeded in drying double flowers; I think he has neglected to put sand between the petals. As I have had occasion to practise drying and colouring many kinds of flowers, Grasses, and Moss by the thousand for many years in Germany and France every season, with the best success and without much trouble, I am induced to communicate my experience, the more so as I have observed a curious secrecy on this subject displayed by most of those gardeners who have had any practice in this matter; and I should be very glad if the following article would induce those who have had some experience upon this subject to publish the results at which they have arrived.

There are several ways of preserving flowers in their natural colours, or in other colours, viz., by drying, smoking with brimstone, and colouring. I shall first speak of drying and smoking with brimstone, leaving colouring for a future number. There are different processes adapted to the condition of the flowers which are to be dried. The most simple of all is to cut them in a dry state and hang them in a dry shady place on strings or on stakes, not too thick, where for many years they may dry and remain till they are used. In a room not closed against the daylight, or at least against the sunlight, the colour will not keep well, but will bleach more and more and become pale; while in a damp room the flowers will rot. If, however, they are to be used for bouquets or other decorations, it is a very good plan to place them in a slightly damp atmosphere the day before, where they may attract a little moisture. If used in a quite dry state, they are too liable to break, which is prevented if they have thus been moistened a little. Care, however, should be taken as to the state of the flowers when cut for drying. The best state for most kinds of flowers is when they have not yet begun to bloom (not yet opened), because after being cut and hung up they always, in some degree, continue their blooming; but if cut in a too full blooming state, they pass, while drying, into the state of ripening, *i.e.*, they ripen their seeds and are afterwards useless, as those flowers are too liable to fall out. If all this is attended to, the following kinds of flowers preserve their natural colours very well:—*Statice*, many varieties, especially *S. incana*, *sinuata*, and *Armeria* keep beautifully; *Gypsophila elegans*, very pretty in bouquets, even in those of fresh flowers, and much used for this purpose on the continent; *Gomphrena globosa purpurea*; *Helichrysum*, many varieties, especially the hardy annual ones, but they ought to be cut in a very early stage, or in bud, because they are finest if cut before they open. To the *Helichrysum* belongs also the celebrated *Immortelle* plant, about which I have read a very interesting article in one of the late numbers of *THE GARDEN* (see p. 152). *Acroclinium roseum*, a pretty flower of a beautiful rosy colour; *Rhodanthe Manglesii*, a little smaller than an *Acroclinium*, and one of the prettiest dried flowers; *Delphinium*, all the blue or red varieties, as *Ajacis*, *candelabrum*, and the blue perennial varieties. Especially fine also is our common *Delphinium Consolida*, which represents the finest blue among dried flowers, and may be found in the summer time in the fields in some places. Besides the foregoing, there are, without doubt, many others which will answer well in this way. There are also the Grasses which keep well, and are of a very ornamental character, either by themselves in Grass bouquets, or together with other dried flowers, giving them a lighter appearance. I will name *Gynerium argenteum*, the pretty varieties of *Agrostis*, as for instance *A. pulchella* and *nebulosa*, *Lagurus ovatus*, *Hordeum jubatum*, *Briza*, and its varieties, among which is our common *Briza media*, one of the finest, and many others. I now come to kinds of flowers which are more difficult to dry, *i.e.*, which will always change their colour or spoil their form if dried in the foregoing

manner, as for instance, *Viola tricolor maxima*, *Pelargonium*, *Geranium*, &c. They must all be dried in silver sand. The silver sand must be rendered quite clean, without any organic matter whatever, by repeated washing, until the sand ceases to discolour the water; afterwards it must be perfectly dried. To make it fit for the purpose, however, we must heat the sand rather high, and in this state mix with it, by constant stirring, a little bit of stearine, which prevents the sand from adhering to the flowers. Afterwards we must have a box, not higher than three inches, but as broad as possible. This box has, instead of a bottom, a narrow-meshed iron-wire net at a distance of $\frac{3}{4}$ inch from where the bottom should be. Such a box is placed on a board and filled with sand till the net is just covered with a thin layer of sand. Upon this layer of sand is then placed a layer of flowers, and then again a layer of sand, then flowers, and so on. The layer of sand varies in thickness, according to the kind of flowers, from $\frac{1}{2}$ to $\frac{3}{4}$ inch. In this way we may put in the box two or three layers of flowers; more than three will not answer well. This being done, the box must be removed to a very sunny dry place, the best being close under the glass in an empty greenhouse, &c., exposed to the full influence of the sun. If the weather is sunny and dry, the flowers will be perfectly dried in four or five days—*i.e.*, in France and Germany; in our English climate, however, we have not always sunny weather enough for this purpose, and the sun has not so much power as on the continent. We, therefore, generally require a week or even ten days of sunny weather; and, if we have no sun at all, but foggy and wet weather, we must dry our flowers in a dry room which is slightly heated. When the flowers are dry, the box is lifted a little, the sand falls gently through the iron net, and the flowers remain in their positions over the net without any disturbance whatever. They should then be taken out carefully and kept in a dry, and, if possible, dark place, where no sun can reach them, and afterwards they will keep very well for many years. In this way nearly every kind of flower, single or double, may be thoroughly dried. Generally, they are dried in this way for the trade—*Pansies*, *Pelargoniums*, *Geraniums* (the double ones are especially fine), *Asters*, *Roses*, *Calceolarias*, *Aconitum*, &c.; care is, however, to be taken that the flowers are cut in dry weather, and that, while lying in the sand, no part of the flower shall touch another part, as this always spoils the colour and causes decay. Between all the parts of a flower sand must be filled in; therefore, it is necessary to put in the double flowers in an erect position—*i.e.*, with the stalk downwards—in order to fill the sand between the petals; while most of the single-blooming flowers, especially *Pansies*, must be put in with the stalks upwards. With *Calceolarias*, *Aconitum*, and other flowers which are formed like them, the cavity of the flowers must be carefully filled with sand before laying them in. White flowers do not retain their pure white colour, but always become slightly tinged with yellow. Among dried flowers we have hardly any representative of a pure white except the *Anemobium alatum* and white *Immortelles*.

Merriott Nurseries, Creukerne.

GUSTAVE WERMIG.

Lime and Magnesia Preventives of Potato Disease.—

From an account of some analyses of the ash of diseased Potatoes, communicated by Mr. A. S. Wilson to the *Chemical News*, we extract the following:—"Different observers state the per centage of magnesia in the ash of sound tubers at from 5 to 10 per cent.; in this case it is only 3.94 per cent. In the two samples of diseased ash, Mr. Hannay only found 1.00 and 0.1 per cent. of magnesia. Similarly, Mr. Hannay's, as well as my own, results show that the amount of lime is abnormally low in the diseased samples. In this case I found 1.77 per cent. of lime; in the sound sample Mr. Hannay found 5.19 per cent., and considerably less in both the diseased samples. Some years ago, Professor Thorpe found, from the analysis of diseased and healthy Orange trees, that in the former the amounts of lime and magnesia are deficient; the same thing, we have seen, is the case in the diseased Potato plant. It has lately been shown, by Dr. F. Grace Calvert, that lime is one of the few substances which we know that are capable of altogether preventing the development of fungi in organic solution. He does not give any experiments relating to the action of caustic magnesia on fungi, but doubtless its action will be found to be similar. Here, then, is a curious and, at the same time, significant fact—diseased Potatoes are deficient in lime salts, and lime prevents the development of fungi."

THE JARDIN DES PLANTES IN PARIS.

THIS, like the Jardin d'Acclimation, is partly devoted to zoology as well as to horticulture and botany, and here lectures are given to students in nearly all branches of natural science, including arboriculture as applied to both ornamental and fruit-bearing trees. The museums are full of valuable specimens and preparations, adapted for illustration and comparison, both in the animal and vegetable kingdoms. The garden is limited in extent, but well wooded, and contains well-arranged collections of ornamental trees and shrubs, as well as of herbaceous and economic plants. Fine specimens of the dwarf fan Palm are placed on each side the lecture hall during the summer season. These plants have a history of their own, having been presented to Louis XIV., and are remarkable for the size of their stems, which are 20 feet or more in height. Here are good specimens of *Celtis australis* and *C. occidentalis*; a robust tree of the silvery Lime, *Tilia argentea*; *Fraxinus americana*, with foliage not unlike that of the black Walnut (*Juglans nigra*), grafted about 2 feet above the ground level, on a stock of the common Ash. There is also a good specimen of the Judas tree (*Cercis*), and two noble trees of *Paulownia imperialis*, brought to the garden in 1834. One of these is about 30 feet high and nearly perfect in form, having an undivided trunk 12 feet high, and a large and healthy head of fresh foliage. These fine specimens are now heavily laden with clusters of pale yellowish-green fruit about the size of Muscat Grapes. One interesting feature here is a Yew tree 40 feet in height covered with *Lycium barbarum*, and elegant fresh festoons of *Wistaria* (*Glycine*) *sinensis* droop in masses from bough to bough in the most charming manner possible. This last plant (*Wistaria*) is one of the most beautiful of all wall plants for town gardens, and a specimen of it here, growing on the open lawn partially supported by stakes, is an attractive object, especially to those who seldom see the plant otherwise than nailed formally along a wall. Iron railings and palisades, usually so prominent in town gardens, might be draped with elegant festoons of this plant with advantage.

I noticed a fine border full of bedding plants, succulents, and sub-tropical plants, all correctly named, a practice especially useful in the case of succulent plants which are not well known by the generality of gardeners. Of these I observed a collection adapted for carpet beds or borders, including the following species:—*Sempervivum Braunii*, a dense-growing glaucous species; the well-known *S. arachnoideum*, covered with silvery hairs, not unlike those of a spider's web; and *S. arvense*, a curious kind, reminding one of a dense stunted form of *S. calcareum*. *S. soboliferum* is a dense-habited green form, the entire plant being but little larger than a shilling, while the young plants are of a deep crimson colour. I also noticed here *Cassia floribunda*, forming a shrub three to four feet high, and flowering freely. This makes a fine greenhouse plant when liberally treated, and is highly ornamental when grown in small pots for conservatory decoration. A feature of this garden, of much importance in an educational point of view, is its fine collection of plants for general instruction, all of which are correctly labelled. They are grown in a part of the garden separated from the other portions by a neat fence, and open daily, Saturdays excepted, from six to nine, ten to two, and from three to six at night. The plants are arranged in narrow oblong beds, placed parallel with each other; and walks and alleys enable the visitor to examine either plants or names with the greatest ease. In order to distinguish the different groups, the names are printed on different-coloured labels thus:—

Medicinal plants	Red labels.....	⊙ Annual.
Food "	Green "	♂ Biennial.
Economic " (arts)	Blue "	♀ Herbaceous.
Ornamental "	Yellow "	h Woody.
Poisonous "	Black "	

Immediately on entering this department (Ecole de Botanique) the visitor is struck with the richness of the collection; and the labels are not only plainly painted in large type, but are also elevated on slender sticks 2 or 3 feet above the ground level, so as to obviate any necessity for stooping. This is worth the attention of the authorities of our own public gardens; for we know of nothing more wearying to the patience than being forced to bend the head level with one's knees in order to decipher a badly-written label nearly

obliterated by contact with the wet earth during rainy weather. In many points the French are years behind ourselves; but there are one or two things we may learn from them with advantage. I noticed in this garden a good collection of Grasses and hardy or half-hardy Bamboos, all in the most luxuriant health and vigour. Two or three species of *Arundinaria* are just now throwing up their great brown plumes, and of these both *A. japonica* and a *halepensis* are well worth growing in isolated masses in shady positions on a warm-laying lawn, where they form conspicuous objects, nearly as effective as the Pampas Grass. Two effective Grasses here are *Pennisetum longistylum* and *P. Mileaceum*; the former, producing silvery plumes on stalks about 18 inches high, is very effective, and well suited for using as a bedding plant, or for marginal belts and ribbon borders, where it would be shown off to advantage.

Several Chinese Bamboos growing here are from 8 to 10 feet high, and are very effective planted out in many of the public parks and gardens round Paris. The best are *B. aurea*, *B. gracilis*, and *B. viridi-glaucescens*; and these would succeed well in many sheltered parts of the south of England during the summer months. Here we noticed an effective group of Sea Hollies, among which *Eryngium eburneum* is conspicuous, bearing spikes 8 to 10 feet high. Several species of *Smilax* may here be seen growing side by side, *S. aspera* and *S. excelsa* being 8 to 10 feet high, and deserving of notice as ornamental trailers. *Smilacina racemosa*, a plant exceedingly like *Polygonatum multiflorum* in general habit, is now bearing its terminal racemes of copper-coloured berries the size of small peas. Another trailer, *Dioscorea Decaisneana*, growing 8 to 10 feet high, is just now flowering profusely, and its blossoms, which are small and of an apple-green colour, though inconspicuous, are most deliciously perfumed. A notable feature here is the collection of hardy and tropical aquatic plants grown in cemented tanks out doors. This idea is worth notice in our own public gardens, as many plants grown in stifling stoves bloom profusely in the Jardin des Plantes in the open air without any protection whatever during the summer months. *Limncharis* (*Hydrocleis*) *Humboldtii*, *Nymphaea rubra*, *Papyrus antiquorum*, and other tropical plants succeed here admirably, along with many others equally tender and interesting to the horticulturist. A collection of plants grown for culinary purposes is very interesting, the plants being arranged in oblong parallel beds, neatly margined with Box edgings. As with ourselves, the Elms and Limes have a rusty appearance at this season of the year, while *Acacias* and *Planes* are as fresh and attractive as ever. Everywhere around Paris I was struck by the refreshing greenness of the last-named trees, which are so largely used in the avenues and boulevards. Another handsome shrub or small tree common here is *Rhus copallina*. This is very effective, and its lobed foliage is nearly as graceful as that of Ferns or Palms. The bedding display in the Jardin des Plantes is not particularly attractive (though a good view of the flower-garden is obtained), as it is sunk in a quadrangle some 3 or 4 feet below the general ground level. The plant-houses contain numerous curiosities, chiefly of botanical interest, and not calling for any special notice here. Ferns, Pampas Grass, Tamarisk trees, Yuccas, Portulacas, and other plants are grouped in masses, or isolated on the turf beneath the shade of tall white Poplars and the elegant drooping festoons of the weeping Willow, one of the finest and most appropriate of all trees for harmonising with aquatics and water-side vegetation. The intelligent visitor to the Jardin des Plantes will find much to admire, and some few things which it will be as well to avoid in our own practice here at home.

F. W. B.

MANY acres of the waste lands of Utah—which, owing to the large quantities of salt and alkali with which the soil was impregnated, were hitherto unfertile—have been thoroughly reclaimed by flooding the fields or lots with fresh water, which, after standing for some time, is drawn off, carrying with it the dissolved minerals. This, being repeated a few times, leaves the soil sweet and suited for crops of all kinds. Where there is not water sufficient to flood the fields, it is found a good plan to plough often, leaving the surface rough and ploughed in such a way that, when it rains, the water may run off into the ditches.

GARDEN DESTROYERS.

BROWN-TAILED MOTH.

(BOMBYX (LIPARIS) CHRYSORRHEA.)

ABOUT April, or soon after that time, the gardener may occasionally see surrounding the bare twigs of his orchard trees a little patch of something hairy, as if a little bit of mouse's or squirrel's fur were rolled round the twig. He cuts off the twig, and, investigating the patch of hair, he finds under it a quantity of eggs, laid like those of the lackey moth, in a bracelet ring round the twig, only usually in a longer and more continuous series—perhaps an inch in length. These are the eggs of the *Bombyx chrysorrhea*, and the fur covering them is a quantity of hair rubbed from the tail of the moth, probably involuntarily by it, in laying the eggs, which must, when freshly laid, be covered with a glutinous secretion, which rapidly dries. To this the long hairs from the tail of the mother insect adhere, the secretion hardens and detains them, when they break off and remain as a natural protection to the eggs. The quantity of hair so surrounding the eggs is surprising, looking often twice as big as the whole moth itself. These are eggs that have been laid by early-emerging moths, which have passed the winter in the chrysalides, having been too late for the previous season. The main body of eggs are laid later in the season, in August or end of July. They are,



Caterpillar of the Brown-tailed Moth.

when newly laid, of a rose colour, which becomes grey as they get older. As soon as the eggs are hatched, whether it be in the end of spring or the beginning of September, the young caterpillars, as soon as born, set to work to build a sort of silken tent, enveloping some leaves on which they feed. This has the appearance of a thick web among the leaves and twigs. If broken open, it will be found to contain many cells—one, in fact, for each caterpillar, each of them making its own room, as it were, besides contributing to the general erection of the house. This is used as a shelter or place of refuge into which they retire when night or a shower comes on. In the morning, or, when fine weather returns, they come out again and disperse themselves over the surrounding foliage on which they feed. As they are very voracious, they soon consume the leaves in the immediate vicinity of their tent, and then they go farther off to another part of the tree and construct a new tent. Before winter comes on, they have generally changed their skin once. When the cold weather comes, and the leaves fall before the autumnal blast, the caterpillars retire under the shelter of their tent, and fall into a state of torpidity, in which they pass the winter without food. As soon as spring revives vegetation, and the fruit trees begin to blossom, the caterpillars revive too, and come out, with a hunger

proportioned to the severity and extent of their fast, to carry on their ravages and devastate the orchards in which they have established themselves. The season passes on, they increase in size, and cast their skin when it becomes too tight for their growing bulk. After their last moult, they do not return to their tent, but disperse themselves over the tree. The accompanying figure shows the full-grown caterpillar. It is blackish-brown, with rows of tubercles of the same colour, each of which bears a tuft of ferruginous hairs. There is a



The Brown-tailed Moth.

double row of white spots on the back of the fourth and following segments, and on the ninth and tenth (and sometimes also on the two preceding) segments is a spot of vermilion, placed between two small tufts of ferruginous hairs. These red spots are somewhat vesicular and slightly retractile. The larva usually passes into the chrysalis state in the month of June, first spinning a soft grey cocoon, which it places between the leaves or in the bifurcations of the branches. The perfect insect comes out in the following month. This is a common insect; on the continent it is exceedingly numerous, and destructive to fruit trees. It is to it that the decrees ordaining the collecting and destroying of caterpillars more particularly apply. This clearing away of caterpillars (called *Echenillage* in France) is comparatively easy with this species, the nests of the caterpillars being easily seen at all times, and especially conspicuous in winter. They are generally placed near the ends of the branches, and look like a bundle of withered leaves mixed up in a dense spider web. They can easily be cut off and destroyed, and the sooner this is done after winter has fairly set in the better. If delayed too long, fine weather may have returned, revived the little caterpillars, and tempted them abroad. A good many parasitic *Ichneumons* are recorded as helping to keep this destructive moth within bounds.

A. M.

Slugs.—We all know that quick-lime causes these troublesome depredators to rapidly disperse; but I have found that it often sends them to where, of all places, we would not wish to see them. Mr. Coleman, gardener to Lord Somers, adopts the following method of getting rid of them:—A lad is sent along all the walks of the garden each evening with a bag or bucket full of bran, and he places a handful of it on the borders, at every 8 or 10 feet or so, in a heap. Early next morning he traverses the same ground with an empty bucket, dust-pan, and small broom. Bran is an article slugs are very fond of, and it seems to attract them from all quarters; the heaps are, therefore, found covered with them, often a complete mass. The lad then sweeps the whole into his dust-pan, empties it into the bucket, and by the time he has finished his walk, many hundreds, if not thousands, are thus captured. A week or two of such work, or even a day or two now and then, must be the means of saving a great deal of our garden produce. I would recommend that when collecting the slugs, a little salt and water be in the bucket, which will effectually prevent the escape of a single member when captured, as the salt causes them to sicken and die at once.—I. HUE.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Ants on Lawns.—I have found flowers of sulphur useful in checking ants where boiling water cannot be used.—J. W., *Croydon*.

A Connecticut man. who set out an elaborate scarecrow in his Strawberry plot, was surprised to find that a pair of robins had built their nest and were raising their young under its hat.

Wasps versus Peaches.—About ten days ago wasps commenced destroying our Peaches in good earnest. Not having an extra large crop, I was, of course, most anxious to save them, which I have done by "taking" five hives of bees, and putting the empty hives by the side of our Peach walls. In a few minutes they were, literally speaking, full, when I treated each hive to a little boiling water, killing the wasps by thousands. I find Scott's Mixture of no use. I covered them all over with it by way of experiment, but it failed to kill them.—R. GILBERT, *Burghley*.

GOWAN VERSUS DAISY.

THE Gowan is the Scotch and north of England name for the *Trollius europæus*, or Mountain Globe-flower. This plant, more local than rare, is found in Burns's part of Scotland on steep braes, as he alludes to it in "Auld Lang Syne"; and Withering states that "it grows in shady mountainous situations, not commons." I have heard the name of Gowan also erroneously applied to the Marsh Marigold and the *Ranunculus auricomus* (Goldilocks), by people who did not know one of these plants from the other. Burns's "Ode to the Daisy" shows that he knew the difference and alluded to two different flowers. In the glossary of a large edition of Burns's works, published by Blackie & Co., it is true that Gowan is said to be "the local name of the Daisy, Hawkweed, Dandelion, and other yellow flowers." This is evidently loose and incorrect, and the statement of one who knew little or nothing of botany. In "The Botany of the Lake District," an appendix to Mrs. Lynn Linton's work, "The Lake Country," I find the Globe-flower or Lucken-gowan. This list was compiled by one of the ablest botanists of the present day. A Scotch land-steward recently said to me, "I wish the weather would take up; all our Wheat is dead ripe, and as yellow as a Gowan." This is a common north-country expression on both sides of the border, which I have heard used hundreds of times when anything of a bright yellow was alluded to. While fishing lately, my companion exclaimed "I hooked a trout just now with a belly like a Gowan," i. e., bright yellow. He also is a first-class botanist, and well known as an able contributor to the leading journals in that line. Moreover, as he suggests, Burns would not apply the epithet "fine," *alias* gaudy, to a Gowan, if he meant a Daisy; when writing directly and specially about a Daisy, he addresses it as a "Wee, modest, crimson-tipped flower."

JACKSON GILLBANKS.

WORK FOR THE WEEK.

PRIVATE GARDENS.

The Arboretum.—Ornamental fruit-bearing plants now form a conspicuous feature in this department. The Mountain Ash is literally loaded with clusters of brilliant berries, and the *Pyracantha* and Siberian Crab are equally well furnished with beautiful fruit. The berries of the Holly, both yellow and red, *Cotoneasters*, *Pernettyas*, and *Skimmias* are also very ornamental. The *Andromedas* are showing their flower-buds, but the most exquisite of all hardy plants in bloom at present are the various forms of the Wild Heather and Irish Heaths. Now is a good season for transplanting evergreens, with, perhaps, the exception of Hollies, consequently where it is possible to move them now it should be done. For *Rhododendrons*, *Kalmias*, and other peat-loving plants, make roomy holes, and incorporate with the natural soil (if not peaty) the refuse peat from the potting bench, and also some decayed manure. In planting, carefully spread out the roots, make the soil pretty firm, and give it a good watering to settle it. Transplant or prick out one and two-year old seedling *Rhododendrons* in nursery lines in beds, and stick some fresh Fern fronds amongst them, so as to shade them. Make cuttings of Laurels, Ivies, *Euonymuses*, &c., and insert them in well-sheltered borders. Layer the young shoots of evergreens where it is desirable to increase the stock of them, and place a little prepared soil, consisting of leaf-soil, peat, loam, and sand, around the incision or portion placed in the soil. The layers of deciduous trees and shrubs may be cut asunder from the parent stocks, but they must not otherwise be disturbed until the fall of the leaf, when they may be lifted and transplanted. Conifers, with care, may be removed at almost any season of the year, but just as their buds are swelling into growth in spring is the right time to remove them. Now, however, is the right time to propagate them from cuttings and by grafting. It is only necessary to increase the finest kinds in this fashion, for Pinuses, Piceas, Abies, and some others, as a rule, come so freely from seed that it is unnecessary to have recourse to any other method. For the perpetuation of sports and finely-variegated forms of *Cupressus*, *Retinosporas*, *Juniperuses*, &c., grafting is the safest mode of procedure, and it is the readiest one by which slow-growing plants may be raised in quantity. For instance, many *Retinosporas* take a considerable time to make strong plants from cuttings, whereas by means of grafting on good stocks, vigorous healthy plants may be obtained in twelve months. Select for cuttings good thinnings from the side shoots, about 5 inches long, and prick them in pretty thickly in 6-inch pots, half filled with drainage, on which is put some peaty soil, surfaced with sand. Place the pots containing the cuttings in a cold frame for a time, and closely shade them. Thus circumstanced, they soon callus, whilst if inserted at once in a little heat in a close frame rot would certainly destroy a considerable portion of them. Before grafting see that

the stocks are well established and healthy, for on that more than upon any other thing depends success in the operation; and, if possible, have them in comparatively small pots, so that a shift after the scions have taken may act advantageously. Side-grafting in the case of Conifers, as well as in that of *Camellias* and most hard-wooded plants, is the best method to pursue; it may be effected by making a slip along the side of the stock for about half-an-inch, at the root end of which should be left a niche, so as to prevent the scion from slipping downwards. The scion must be cut as near as possible to fit this incision, which should be made more to suit the scion than the stock to suit it. Secure the scion to the stock by means of soft bast or worsted, and leave the stock untopped till spring, or as soon afterwards as the scion is able itself to utilise the sap furnished by the roots. When all has been finished, place the grafted plants in close frames inside pits or other frames, where the temperature will not fall below 42° or 45° during any part of the winter. They must be closely shaded, and if the stocks are too tall to stand erect in the frames, they may be placed in a slanting direction, so as to fit the frame, but in all cases care must be taken that wet does not lodge about the union of the scion and stock, otherwise damping off would certainly be the result. *Aucubas* may now be rapidly increased by means of cuttings made of the half-ripened wood, in a close pit or partly-heated frame. They also strike freely in an intermediate house in cocoa-nut fibre, in which has been mixed some silver sand. If put in thickly, after they become rooted, they should be lifted, and planted in boxes or pots. Japanese Maples that were layered indoors may have the layered branches removed and potted, but do not interfere with those outside until next month, unless their branches were formerly separated, and they can now be lifted with good roots. Layers of *Clematises* should also be separated, and the summer-struck cuttings and spring-grafted plants potted as they require it. If there is a young stock of Conifers, *Rhododendrons*, *Aucubas*, and other hardy plants yet in pots in the pits or frames, expose them as much as is advisable, but do not plant them out until spring, as they would be liable to suffer in winter. Pot-nursed plants are always best transplanted in spring.

THE KITCHEN GARDEN.

Prick out Cabbage plants a few inches apart each way, on moderately light soil. Plant out the strongest 12 or 15 inches apart, where space can be spared for them. Any piece of ground that has just been trenched and ridged—such as Potato ground, or that lately occupied by Strawberries, French Beans, Onions, or other crops—makes an excellent home for Cabbages, because the plants may be planted along both sides of the ridges, from which they get considerable protection. Sow Cauliflower seeds at once in a warm situation in the open air, if not already done, and prick them into frames when hard frost is likely to set in. Where the locality is cold and the sowing has been delayed, it is better to sow at once in light soil in frames. Indeed, some prefer sowing in frames to sowing out of doors and afterwards pricking the seedlings into frames. If such be the case, the last week in September and the first week in October is the right time to do it; and, if a foot deep of leaves be firmly pressed under the frames, so as to give a very little bottom-heat, it will be found highly beneficial to the seedlings. Dryness of the surface is the great secret of wintering Cauliflowers in frames successfully; therefore, always have a good store of dry dust and wood-ashes at hand for strewing amongst the plants in dull, wet, or foggy weather. Earth up Celery as the plants require it, and plant out some for a late supply. Earth up Leeks to give them long blanched necks, and transplant some more for spring use. Earth up the strongest Cardoons in fine dry weather, after tying the leaves together with hay or straw bands; they are generally fit for use about three weeks after being tied up. Use every means to ripen out-door Tomatoes. Placing lights in front of them is of great assistance in causing them to colour well; but, if such appliances cannot be resorted to, and there is little probability of their ripening on the plants, remove them as they become fully swelled, and place them in a frame close to the glass. Vegetable Marrow plants, with a little care and pruning, might be kept in good bearing condition for some time yet, provided they have escaped mildew. It is almost useless to keep Cucumbers longer in frames that are neither heated with hot-linings nor hot-water. Have a good succession of French Beans in frames, and modify their growth by more or less heat to suit the time when they are required for use. Plant out Lettuces as opportunity occurs, and also Endive upon dry banks and other favourable places. Tie up the farthest advanced plants of Endive with matting so as to blanch them and make them crisp and good before they are used; and lift a few plants and place them in frames some time before they are required for use. Harvest as speedily as possible any Onions still in the ground, and tie them up into bundles to hang on nails or pegs in the fruit room or shed, in preference to permitting

them to lie about the ground. Weed August-sown Onions, and scatter over the surface of the ground some sifted wood-ashes, dry soil, lime-rubbish, or soot. Sow Chervil, Mustard, Cress, and Rape on a warm border, and also some Spinach for spring use. Make another sowing of Radish in the open air if necessary, and about the end of the month make the first sowing in frames. Lift a few Chicory roots and place them in the Mushroom-house. In order to perpetuate the fruiting of Scarlet Runners and French Beans, pick off every serviceable pod, and rather than leave a few pods for seeds on each plant permit a few plants to be exclusively set apart for that purpose. Treat Peas in the same manner. Never allow vegetable crops to encumber the ground after they have become useless; on the contrary, clear them off at once, heavily manure the ground, and trench and ridge it. Save all stakes for next year, and convey all refuse vegetables to the rubbish heap.

THE FLOWER GARDEN.

The heavy rains which have fallen have been very destructive in this department. Lift any tender plants that can be spared from amongst the others, pot them, and place them in close frames, so as to have them established before winter sets in. Propagate Pelargoniums in close frames or greenhouses, and begin the increasing of Calceolarias and Gazanias. Any isolated specimens of sub-tropical perennial plants, such as Palms, Zamias, and Dracenas, should be housed before there is danger of their being injured by frost. Plant bulbs of all spring-blooming plants in borders or other available places, and reserve sufficient bulbs to fill the flower-beds when the bedding plants are removed. In transplanting Lilies of different sorts a good mixture of rotten manure should be added to the soil, and the bulbs should be placed in situations in which there would be little probability of their being disturbed for two or three years.

Conservatories.—A good succession of blooming plants at this season is a difficult matter, and therefore we should endeavour to maintain as much leaf-beauty as possible. Berry-bearing plants, such as Skimmias and Solanums, are also very ornamental, as are likewise Lapagerias and Passifloras, amongst flowering plants. Lift Solanums from the open ground, and place them in frames for a time. Take Aucubas indoors, so as to induce their berries to ripen, and encourage the growth of a few of the strongest Cyclamens by keeping them near the glass in houses or pits that are heated a little, and where they can have plenty of ventilation. Take care to keep up a good succession of Balsams, Cockscorns and other Celosias, Primulas, Globe Amaranths, Fuchsias, Mignonette, double-flowering Pelargoniums, Statice, and a few other similar plants. Gradually dry off Lilies in pots, also Clerodendrons of the Kæmpferi section, Daturas, &c. Caladiums must be kept in good condition as long as possible; as soon as they begin to decay they should be stored away in a dry place in order to ripen their bulbs. Gloxinias should also be placed on dry shelves, and young plants of them raised from leaves, if large enough, should be potted singly. Achimenes in suspended baskets require a thorough overhauling about this season, so as to prolong their season of blooming. Remove all decayed leaves and flowers, and thin out some of the shoots. Encourage the growth of Aphelandra Roezlii, Poinsettias, and Euphorbias, bearing in mind that short stubby growths are better than long weakly shoots. Take indoors the majority of plants placed outside, such as Heaths, Epacris, and hard-wooded plants in general. Wash the pots, and syringe the plants clean before housing them, and, in the event of mildew making its appearance, apply sulphur freely in order to counteract its progress. Well-rooted cuttings of hard-wooded plants may be potted off at once if there is convenience, to get them established before winter; but, if not, defer the operation until spring, when they may be potted off singly and grown on in a gently-heated frame.

A New Poison (Strophanthus hispidus).—There has lately been discovered a poison called "inca," which is said to be more subtle than digitaline. It is obtained by pressure from the seeds of *Strophanthus hispidus*, an apocynaceous plant found in Gaboon; and from experiments made with samples of it, taken from arrows upon which the natives place it, it appears that it acts more powerfully than digitaline or antiaraine, and quickly paralyses the heart. Three milligrammes kill a frog, a sparrow, or a dog, though the resistance of certain animals varies: a snail, for instance, requires five milligrammes; a mouse has withstood three milligrammes of the extract (obtained by macerating the seeds in alcohol); while this latter dose kills a dog, nearly a thousand times heavier than the mouse. The heart comes to a complete standstill after a few irregular efforts.—*The Druggist*.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY,

SEPTEMBER 17TH.

NOTWITHSTANDING the frequent heavy rains which we have had, this meeting was more successful than could have been anticipated, both fruits and flowers being furnished in tolerable abundance, though not nearly so profusely in the competition classes as in those devoted to miscellaneous subjects.

Plants, Cut Flowers, &c.—In the class of a dozen blooms of Zinnias, Mr. C. Osman, South Metropolitan Schools, Surrey, was first with fine well-coloured blooms; but the other exhibits in this class were not particularly remarkable. There was a class for Stocks, but the two which competed were of inferior quality. In the class of a dozen spikes of Pentstemons, Mr. B. Porter, Syon Lodge, was second, no first prize being awarded. Helichrysums, too, were only moderately good; and there was no competition in the class devoted to Celosias. For six Begonias in flower there was no competition; but for six of the same kind of plants in the fine-foliage section, Mr. Walker, Gunnersbury House, was first with The O'Donoghue, Rollissonii, Rex, Manoel de Silva Brusky, Princess Charlotte, and Marshallii; while Mr. T. Farrow, Brigadier Hill House, Enfield, was second in the competition. The most attractive feature of the meeting was, probably, a dozen specimens of Tea-scented Roses, in pots, which were exhibited by Mr. William Paul, Waltham Cross, in excellent condition. The blooms were abundant and good, and the foliage clean and healthy. The varieties were President, Unique, Madame Hippolyte Jamain, Monsieur Furtado, Marie Van Houtte, Madame Jules Margottin, Souvenir d'Elise Vardon, Jean Pernet, and Catherine Mermet. In addition to these, Mr. Paul exhibited a miscellaneous collection of cut blooms of Hybrid Perpetual and Tea-scented Roses, all of the greatest possible excellence. Amongst the Hybrid Perpetuals the following were the finest, viz.:—Duke of Edinburgh, Dupuy-Jamain, General Jacqueminot, Marie Baumann, Paul Neron, Mademoiselle Annie Wood, Alfred Colomb, Senateur Vaisse, Baroness Rothschild, Louis Van Houtte, and Marquise de Castellane. Conspicuous amongst the Tea-scented varieties were President, Belle Lyonnaise, Gloire de Dijon, Souvenir d'un Ami, and Alba rosea. Mr. Paul also showed a collection at extremely pretty and brilliantly-coloured Zonal Pelargonium blooms; and a stand of Gladioli. From Messrs. Veitch and Sons, Chelsea, came a collection of Hardy Heaths in flower; also Menziesias, and plants of Pernettya mucronata thickly covered with berries. The Heaths consisted of Erica vulgaris, with white and yellow variegated leaves, the double-flowered variety of the same, a beautiful carmine-coloured variety called Alportii, and a white-bloomed sort. There were also E. vulgaris rigida, and a showy white variety called E. tenuifolia alba. The same firm also showed some plants of Celosia Huttonii, lifted from the open ground in order to exhibit the dense habit and the crimson colouring possessed by this valuable plant. They also furnished the curious Blumenbergia coronata lifted from the open ground; a new Masdevallia, called maculata, but not so brightly coloured as some of its congeners; and also a new Maranta, called hieroglyphica, a very pretty and ornamental kind. Mr. Wm. Bull, of Chelsea, showed a nice plant of the true Cocoa-nut Palm; and pretty plants of Welfia regia and Dæmonorops fissus; also a large specimen of Dracæna Shepherdii. The same exhibitors likewise showed a specimen of Nidularium ignescens in flower, and showing the bright magenta colouring of the central leaves; a pretty little example of Pourretia brevifolia, a Bromeliaceous plant, compact in habit, and having arched leaves and pinkish-violet flowers with conspicuous yellow stamens; also some hybrid Begonias, remarkable for the size and brilliancy of their flowers; indeed, one called ignea vied in deep scarlet with anything we have yet seen in that way, and it had the peculiar property of producing male flowers only. Mr. B. S. Williams, Upper Holloway, exhibited a miscellaneous collection of stove and greenhouse plants, and Orchids. Among them were excellent plants of Cocos Weddelliana, Dracæna regina, Phormium Colensoi variegata, Dæmonorops, pericanthus, and others. The Orchids comprised some good blooming plants of Odontoglossum grande, Lælia elegans, Cattleya crispa and violacea, Dendrobium McCarthiae, Oncidium dasystyle, and cucullatum, Sophronites grandiflora, Vanda tricolor, Saccabulum Blumei majus and several Anæctochilus. A cultural commendation was awarded to Mr. J. W. Wimsatt, Ashburnham Park Nurseries, for excellent specimens of Dracenas Shepherdii, Fraseri stricta, Mooreana, excelsa ornata, magnifica, and metallica. Mr. C. Turner, Slough, exhibited a fine collection of large flowered self and fancy flowered Dahlias; also clusters of bloom of the Pompona varieties. Amongst the newer varieties of Mr. Turner's Dahlias were Arbitrator, buff or fawn coloured, suffused with purple and yellow at the base of the petals; Duke of Edinburgh, a deep yellow; Florence Pontin, pure white ground and crimson-tipped petals; Mrs. Fordham, French white, tipped with soft purple; Herbert Turner, French white tinged with lilac (fine); Miss Bateman, yellow, suffused with red; and Prince Arthur, a beautiful clear yellow flower. Amongst the others were Annie Neville, white; Chairman, yellowish-buff; Charles Turner, yellow, tipped with crimson; Earl of Pembroke, claret; Fair Imogene, white, faintly suffused with lavender; Flag of Truce, white; Harriett Tetterill, blush, margined with dark purple; James Cocker, purple (fine); John Standish, bright red (splendid); Julia Wyatt, creamy white; King of Primroses, primrose; Lady G. Herbert, white, edged with crimson; Maid of Essex, pale ground, tipped with rosy-purple; Marchioness of Lorne, orange; Memorial, pale rose; Toison d'Or, a splendid yellow; Vice President, orange; W. P.

Laird, lilac; and Yellow Standard, yellow. Amongst the fancies, which are a peculiarly pretty class, were Rev. J. B. Camm, Dolly Varden, Attraction, Fanny Stuart, Flossie Williams, Galatea, Lady Stokes, Grand Sultan, Mrs. Saunders (the finest of its class), Monarch, Pauline, Polly Perkins, Prince Puma, and Richard Dean. In the group of bouquet or Pomponne Dahlias, shown by the same exhibitor, were Little Fairy, Baby Waite, White Aster, German Favourite, Burning Coal, Butterfly, Fireball, Emotion, Prince of Prussia, Little Beauty, Lightning, Northlight, and Prince of Liliputians. Mr. J. Keynes, Salisbury, showed blooms of some of his last year's Dahlias, and also several good seedlings of this year. Amongst the best of last year's blooms were Egyptian Prince, Walter Read, Cremorne, Thomas Goodwin, Miss Turner, Rev. Mr. Camm, W. Newman, Ada Tiffin, Mr. Sinclair, Emily Williams, J. Service, Ne Plus Ultra, Harlequin, and Thos. White. From Mr. Geo. Prince, of Oxford, came a large collection of very fine blooms of Roses, which, notwithstanding the late rains, were extremely fresh and brightly coloured. They were from plants "worked" on his seedling briar stocks. Some remarkably fine French Marigolds were shown by Mr. J. C. Crussell, Safron Walden; and some very dwarf habited plants of the same, with splendid flowers, were shown by Mr. R. Dean, Ealing. Mr. Crussell also exhibited a collection of remarkably large blooms of African Marigolds. From the society's gardens, Chiswick, came a collection of white, pink, and salmon-flowered Pelargoniums, also several plants of *Zinnia Haageana* fl. pl., the blooms of which were very double, and the habit of the plants dwarf and branchy. From Messrs. W. Hender and Son, Plymouth, came a spike of *Amarantus Henderii*, the points of its branches being very brilliantly coloured. From Messrs. J. Standish and Co. came pretty little plants of *Cupressus nootkatensis variegata alba* and *Biota elegantissima*, and a good specimen of *Larix leptolepis*. Messrs. Osborn and Sons exhibited, among other things, plants of *Salix crispata*, or the Ringlet-leaved Willow; *S. americana pendula*, with long pendent branches and narrow leaves; *S. caprea pendula*, or Kilmarnock Weeping Willow; and a species of Willow called Osborn's Weeping, which appears to be naturally of a creeping rather than of a weeping character; but grafted, as it was in this instance, as a tall standard, its branches hung down most gracefully. The same firm also showed a vigorous plant of *Quercus rubra*, or Champion Oak, with beautifully red-veined leaves, 15 inches long and 7 inches wide; and a specimen of *Q. pedunculata concordia*, which, though only grafted last spring, has made a growth some 4 feet in length, the leaves being of a bright-yellow colour. In this collection, too, were shown the *Platanus acerifolia pyramidalis*, or London Pyramidal Plane; the *Acer platanoides dissectum*, with nicely-cut leaves; *A. platanoides*, a tree of a straight erect habit; and the true *Acer rubrum*, the red-tipped shoots of which appear so conspicuous when mixed amongst those of other plants. Amongst fastigiata trees was a specimen of *Taxodium distichum fastigiatum*, as straight as an Irish Yew, and *Betula alba fastigiata*, an erect and handsome tree. The Messrs. Osborn also showed a plant of *Salisburia adiantifolia laciniata*, which was grafted last spring, and which has now a branched shoot nearly 3 feet in length; branches of the *Xanthoxylon piperitum*, with clusters of green fruit; various forms of *Rhus glabra*, one variety (*R. g. laciniata*) being, when in a young state, an admirable subject for sub-tropical gardens, as is also the *Tamarix*, which was likewise exhibited. In addition to these, the same firm showed various variegated-leaved plants, such as *Ulmus campestris aurea*, *U. c. viminalis variegata*, and the variegated forms of *Populus canadensis*, *Cornus sibirica*, *Cerasus Mahaleb*, *Catalpa syriaca*, and others; also branches of various kinds of *Crataegus*, in fruit.

Fruit.—For a collection of Tomatoes, Mr. W. G. Pragnell, Sherborne Castle, Dorset, was first with some very fine fruits of the large-fruited Orange-field, Earley's Defiance, Hathaway's Excelsior, Sim's Mammoth, the Pear-shaped, red and yellow Cherry-fruited, Currant, Grape, and others. Mr. Pragnell was also first for a collection of Vegetable Marrows. There was a good competition in the class of early Pears, and Mr. J. M. Moorman, Coombe Bank, Kingston-on-Thames, was first with Williams's Bon Chrétien, and Mr. J. Woodbridge, Syon House, second with Jersey Gratioli. Amongst the best of the other Pears were Hampden's Bergamot, Louise Bonne of Jersey, and Marie Louise, but Williams's Bon Chrétien was the best. Of Apples, too, there were several fine dishes, and Mr. Woodbridge was first with Kerry Pippins, and Mr. Douglas, of Loxford Hall, second with Reinette Janne Hâtive. Amongst the other dessert Apples exhibited were Ribston Pippins, Blenheim Pippins, Cox's Orange Pippins, King of the Pippins, and Devonshire Quarrendens. Mr. Douglas exhibited some fine Lord Palmerston Peaches, grown in pots in the orchard house; and some Pine-apple Peaches, grown on the open wall, were shown by Mr. Moorman. A basket of fruits, consisting of Grapes, Plums, and Pears, was shown by Mr. W. Coles, Twickenham; and a collection of fruit, consisting of many sorts of Apples, extremely fine outdoor Peaches and Plums. Mr. J. Gardiner, Lower Eatington Park, Stratford-on-Avon, showed some Fairy Apples on the branches; and Mr. Sadler, Wandsworth Lodge, Tooting, furnished remarkably fine Emperor Apples. Mr. Williams, Holloway, showed a seedling Apple, called Williams' Eclipse. Mr. Walker, Dulton Park, Leeds, exhibited a green-fleshed Melon, called Walker's Seedling; Mr. Gilbert, Burghley, sent a scarlet-fleshed sort, as did also Mr. Westcott, of Raby Castle, and Mr. Sadler. Some large seedling Apples were shown by Mr. Westland, Witley Court; and two dishes of Pears by Mr. F. Dancer, Chiswick. From the society's gardens at Chiswick came Beurré d'Amanlis Panaché, and Louise Bonne of Jersey Panaché Pears, also a dish of Muscat Champion and Madresfield Court Grapes. Mr. G. F. Wilson, Weybridge, showed a dish of Early Ascot Frontignan Grapes that were ripe a month ago in a cool orchard house. Mr. A. Smee showed a dish of Gravenstein Apples; and Mr. Donaldson, South Hall, Middlesex, showed a twin Telegraph

Cucumber. Mr. R. Dean showed a fine collection of Potatoes, principally Mr. Fenn's varieties; and also some large samples of Hathaway's Excelsior Tomatoes.

First-class Certificates.—These were awarded to the following:—

Actinopteris radiata (Veitch), a gem amongst dwarf Ferns.
Nephrolepis davallioides furcata (Veitch), a medium growing Fern with crested pinnae; a very desirable kind.
Abutilon Sellowianum marmoratum (Veitch), a very robust plant, with leaves most peculiarly coloured with creamy blotches.
Nepenthes Chelsonii (Veitch), a handsome plant with strong pendent leaves, bearing large pitchers. This plant is a hybrid between *N. Hookerii* and *Dominiana*.
Odontoglossum Roezlii (Bull), one of the most beautiful of *Odontoglossums* in the way of *O. Phalaenopsis* or *Vexillarium*. The flowers are large and pure white, with lemon markings on the base of the lip, and a purplish spot at the base of the two side sepals.
Phyllanthus nivosus (Bull), one of the most beautiful of tender shrubs with the points of the shoots much variegated with white, and shaded a little with pink. A native of the South Sea Islands.
Dahlia Parrot (Keynes), a large flowered fancy sort, the ground colour being yellow, and striped and mottled with rosy-purple.
Dahlia Mrs. Stancombe (Keynes), canary yellow, with the edges of the petals faintly shaded with violet.
Dahlia Letty Coles (Keynes), a deep lilac ground, flaked with purple.
Dahlia Mrs. Lewington (Keynes), a fine self-coloured rosy-lilac flower.
Dahlia White Queen (Wheeler), a fine pure white flower.
Dahlia Emma (Turner), a large flowered lilac-bloomed sort, the under-lip of the petals being the darkest coloured.

THE MANCHESTER EXHIBITION.

(Concluded from p. 225.)

HOUSES, BOILERS, ETC.

Cowan's Compensating System of Heating.—Situated at the back of the conservatories, and near the herbaceous grounds in the gardens, was erected Cowan's lime-kiln, in full working order, and heating 1,000 feet of 4-inch pipes. The boiler, a true saddle one, was fixed in brickwork, and the pit of the stokehole was only 5 feet deep, so that no great objections could be raised against this system, as requiring a great depth of drainage to have it in good working order. Mr. Cowan had brought a boiler purposely made to suit a much less depth of stokehole than that already mentioned, and which, unfortunately, arrived too late for timely erection. It was, however, on exhibition alongside of the one in operation, and seemed well adapted for the purpose required. By the boiler at work a very steady heat was maintained with scarcely any trouble in firing, and the lime produced was of first-rate quality. The limestone is broken into pieces about the size of half-bricks, and fed at the top, and the lime is taken out at the bottom; indeed, the whole system is one of the greatest simplicity and ingenuity, and will prove of the utmost importance in limestone districts. It requires no skilled workman to attend to it, for any labourer or boy can manage it quite as easily, if not more so, than an ordinary coal-burning furnace. The council were pleased to award a silver medal to Mr. Cowan, the inventor.

Glass Structures.—Messrs. T. H. P. Dennis & Co., Chelmsford, showed several examples of their greenhouses and frames, all of which were remarkable for strong but light construction. Their amateur's house is a wooden structure, 10 feet long and 5 feet wide, with a front stage about 29 inches in depth. This little house, when complete, only costs £6, and is remarkably well suited for the growth of Pelargoniums, Fuchsias, and other favourite plants of that kind. The same firm also showed a greenhouse, 18 feet by 12 feet, so arranged that it could be taken to pieces and transferred to any other site. Mr. Perry, Banbury, was the winner of the medal for the best system of ventilating. The house ventilated, according to his plan, was a curvilinear structure, 25 feet in length by 14 feet in breadth. The ribs and runners were of wood, and the glass was fixed in its place by cathedral lead uprights, fastened by brass screws; and the ventilation was performed by means of the double chain, lever, and quadrant system, the top opening along its whole length very easily with cog-wheels and a winch. Messrs. Boulton & Co., of Norwich, had an extensive display of small houses, frames, and plant cases of all kinds, suitable for small gardens and for salad growing, or for nursing and protecting young plants of almost any sort. Besides these, the same firm exhibited a great variety of garden furniture, such as conservatory and lawn chairs, forms, shades, and tables. Lawn mowers, too, were exhibited by them, and also several forms of garden engines, for one of which (a large and useful engine set on wheels) was awarded the medal for the best garden engine. Messrs. Humphrey and Co., Nottingham, showed some nice-looking greenhouses, especially one 40 feet by 18 feet, which was both handsome and useful, and ventilated on the most approved principle. Messrs. W. Richardson and Co., of Darlington, exhibited several plant houses, of commodious and serviceable dimensions, strong and handsome in form, and remarkable for the satisfactory, easy, and simple way in which the ventilation worked upon the leverage principle. For the best garden seat the medal was awarded to Messrs. Elliot, Alston, and Olney, St. Ann's Street, Manchester, for an elegant long seat, the duplicate of which has taken a similar prize at the International Exhibition of Vienna. Mr. Gilbert, of Burghley, showed examples of his new hand-lights, which are not only light and elegant in construction, but particularly well adapted for the growth or propagation of small plants, and they can be made of any required size. Their ventilation, too, is ample, and on an improved principle, and so contrived that it can be applied in wet as well as in dry

weather, without drip. To these frames, or plant protectors, the council were pleased to award a medal.

Heating Apparatus.—Messrs. Dennis and Co. exhibited examples of their horizontal tubular boilers, varying in size from one made to heat 7,000 feet of 4-inch pipes to another made to heat 300 feet of the same kind of piping. These boilers were highly commended by the judges. Mr. S. Deards, Harlow, Essex, obtained the medal for the best boiler with his patent centrifugal apparatus. This boiler is a spiral coil of pipe, self-feeding, and is reckoned a very economical, fuel-saving, and satisfactory invention. Messrs. Green and Co., of Leeds and London, exhibited one of their patent boilers, of considerable proportions, and made for Messrs. E. G. Henderson and Son, St. John's Wood. Mr. Watson, St. Albans, exhibited one of his "Masterpiece" stoves. It is made so that it can be used simply as a stove, having a steam pan on its top to counteract dryness in the atmosphere. It is, however, also made to heat hot-water pipes which may be of any ordinary small size, but the portion representing the union of the flow and return pipes to the boiler is only 1 inch in diameter. Mr. B. Harlow, Macclesfield, exhibited samples of his boilers, one of which, selected to warm a school in Liverpool, is to heat 4,000 feet of 4-inch pipes. Good saddle boilers were shown by Messrs. J. Cowan and Co., Old Trafford, Manchester; and very serviceable tubular saddle boilers by Mr. W. Grimshaw, Rusholme Road, Manchester. Mr. T. Jones, 68, Temple Street, London Road, Manchester, showed his terminal saddle boiler, which is an excellent boiler, requiring a very shallow stokehole. The judges highly commended it. Mr. R. Wagstaff, Hyde, near Manchester, exhibited his upright tubular boiler, which is certainly a good boiler for small and medium-sized houses.

Miscellaneous Appliances.—To Messrs. Follows & Bates, Dutton Street, Manchester, a medal was awarded for the best mowing machine. They exhibited 30-inch and 10-inch "Anglo-American" machines, and also several of their "Climax" ones. For wirework for garden purposes, a medal was awarded to Mr. J. Geddes, 4, Cateaton Street, Manchester, who exhibited a great variety of iron railings, trellises, nettings, fenceings, tree guards, &c., all of a serviceable character. The Manchester Concrete Company, 61, Princess Street, exhibited samples of their work, showing excellent imitations, in concrete, of natural rocks and strata. Messrs. Slack and Brownlow, 1, Victoria Street, Manchester, showed a great variety of horticultural elegancies in the way of pots, vases, and little aquariums and aviaries combined. These were set like plant cases upon pedestals; the water portion being nearest the glass contained fish and plants, and in the centre was a glass case immersed in the water, with ventilation an inch or two above the surface, and in this birds seemed to enjoy themselves. To see the fish swimming, as it were, over the heads of the birds was, to say the least of it, somewhat novel. Mr. J. Cross, Lord Street, Southport, exhibited some rustic garden vases; and Messrs. Inman and Co., Stretford, Manchester, showed very pretty rustic summer houses. Mr. J. Hudson, 46, School Road, Sale, Manchester, showed plant cases for fixing, with cast-iron brackets, outside of windows; and Messrs. J. Davis and Co., opticians, Royal Polytechnic, Regent Street, London, had a stand of thermometers, barometers, and similar horticultural requisites. Messrs. Green and Co. showed a steam-engine roller, similar to those seen in our London streets, and which was made for the Royal Gardens, Windsor. With this machine a newly-metalled or macadamised walk or main road may, in a few hours, be made to present a thoroughly compact and even surface.

DUNDEE HORTICULTURAL SOCIETY.

THE enterprising society of this large and flourishing town had a most successful exhibition last week in the Drill Hall and square in front. It was opened on Thursday by Mr. James Yeaman, the newly-elected president, who delivered an appropriate address, and closed on Saturday by Councillor Macdonald, one of the vice-presidents. With the exception of the show held in the Baxter Park, when the British Association met in Dundee, the society has had no exhibition equal to the one now closed. The well-filled entries were 1,678, being, for plants 241 (pots 811 in number); cut flowers, 429; fruit, 300; vegetables, 708. The amount of prize money was £280; visitors, including members and friends, the chief support of the society, 13,106. The amount paid by the general public for admission was £217 7s. The pot plants were a splendid sight, and showed that the wealthy merchants of Juteopolis are not devoted to Jute alone. The first prize, for nine stove or greenhouse plants (being the challenge cup presented by Joseph Grimmond, Esq., Corbett Castle, and £5 in money), was fairly won by Mr. R. M. McMillan, Mr. Grimmond's own gardener. The local nurserymen vied with each other, carrying prizes in the different departments, greatly to the advantage of the show. Messrs. Robertson and Galloway, Glasgow, carried away the first prize for the best twenty-four Gladioli. The first prize for the best eighteen Dahlias was taken by Mr. John McPherson, Polmuir Gardens, Aberdeen. The Alpines were numerous, and included many rare and fine specimens. The first prize for the best thirty was most decidedly won by Mr. A. Pattison, Baxter Park. The cut flowers, as a whole, were very good, but unmistakably affected by recent raw and rainy weather. The table decorations, hand, table, and coat bouquets were numerous and gorgeous, not a few of them tastefully put up. The fruit was excellent; Mr. George Reid (gardener to Balke Monour) carried off the first prizes for the best four bunches of Grapes, best black bunch, best bunch of Lady Downes', and best bunch for bloom. The first prize for the heaviest bunch was gained by Mr. George Gillespie (gardener to James Paterson, Esq.), of Kinnettles, who also carried off the first prize for two Pine-apples. There was quite a plethora of vegetables. The little

hamlet of Balledgarow, in the Carse of Gowrie, entered in all the departments and carried away no less than twenty-seven prizes. There were two tables, 10 feet by 6, laid out as specimens of dessert decoration, everything complete for a banquet. The first prize, £5, was awarded to Mr. David Ross (gardener to Col. Macdonald), St. Martin's Abbey, Perthshire. The second, £3, to Mr. Mackie, late gardener to the Earl of Camperdown. The merits of both were warmly discussed, and the general opinion appeared pretty equally divided.

On the Offering of Premiums at Exhibitions.—The following on the prize-offering of the great American Pomological Society is worth consideration in connection with similar affairs at home, in which monotony so often reigns. "We hope that the society will vote to discontinue all premiums in future. The objects of the society are to correct nomenclature, to ascertain the adaptability of varieties to the different States, and to take proper notice of new fruits. This offering of premiums to States, societies, or individuals, is foreign to the purposes of the society; and, besides this, it subjects cities where the meetings may be held to an unnecessary and onerous expense. A dozen new fruits are of more value, speaking pomologically, than the whole car-load of old—and no doubt splendidly grown—varieties that will be sent. Hereafter, let those who can show their fruit, but let the matter of premiums be dropped now and for ever, reserving the society's medal for those who have distinguished themselves in promoting pomology. Then, again, if there ever was a waste of time it is in hearing one read an essay on fruit culture, that might just as well be perused at leisure in print. It is generally the case that those who write well do not read well, and if essays are of necessity to be read, let the society employ a reader. If essays must be, let them be submitted to a competent publishing committee."

The Highgate Horticultural Society and Wild Birds.—An effort has been successfully made by this society to interest gardeners in the "Wild Birds' Protection Act." At the suggestion of the Baroness Burdett-Coutts, prizes were offered by her ladyship to those members of the society who signed the following pledge: "We, the undersigned, pledge ourselves to preserve at all times, wild birds, their nests and eggs, and further undertake that we will endeavour to prevent their destruction by others." Upwards of thirty of the principal gardeners of Highgate and its neighbourhood signed this pledge, and are now doing all in their power to preserve the beautiful little creatures that they formerly considered their enemies, but now do so no longer. There is every reason to believe that every member of the society is willing to sign the declaration, and it is fully expected that through the kindness of their patroness, the Baroness, the Highgate Horticultural Society will have taken the initiative in a movement which will be followed throughout the country, and which will do more for the preservation of our feathered songsters than the ill-framed "Wild Birds' Protection Act," or any other known means. To the same end, we have heard with much pleasure that Colonel Jeakes has offered a prize for the best essay on "The use of Birds to the Gardener and Agriculturist, and the necessity for their preservation," the competition to be limited to the members of the Highgate Working Men's Club.

Personal.—Mr. Anstell, formerly gardener to the Duke of Marlborough, has become gardener to Sir Greville Smythe, at Ashton Court, near Bristol; Mr. George, late gardener to Neville Wyatt, Esq., Cheltenham, has been appointed gardener to Lady Rolle, at Bicton; Mr. George Thomson, late of Stanstead Park, has been elected superintendent of the outdoor department of the Crystal Palace; Mr. Rowe, late gardener at the Rookery, Roehampton, has become gardener to the Vicomtesse Clifton, at Dover House, Roehampton.

COVENT GARDEN MARKET.

SEPTEMBER 19TH.

Flowers.—Those for bouquets consist chiefly of Bouvardias, Roses, Stephanotis, Eucharis, Tuberoses, Camellias, Gardenias, white Asters, Pelargoniums, Violets, &c. Plants in pots are chiefly confined to Asters, Pelargoniums, Heliotropes, Vallotas, Fuchsias, Myrtles, Begonia Weltoniensis, and a few others.

Fruit and Vegetables.—Of fruits, the supply is quite equal to the demand. Outdoor Peaches and Figs are plentiful, but they are sometimes sadly destroyed by bad packing. During the past week importations of fruits have been limited. Messrs. Lemons are at present in demand, those from Malaga being scarcely ripe. Vegetables are abundant and good.

Prices of Fruits.—Apples, per half-sieve, 9d. to 1s.; Cherries, per lb., 9d. to 1s. 6d.; Chilies, per 100, 2s.; Figs, per doz., 6d. to 2s.; Grapes, hothouse, black, per lb., 1s. to 6s.; Muscats, 2s. to 6s.; Lemons, per 100, 11s. to 25s.; Melons, each, 2s. to 4s.; Nectarines, per doz., 3s. to 8s.; Oranges, per 100, 12s. to 24s.; Peaches, per doz., 6s. to 12s.; Pears, per doz., 1s. to 4s.; Pine-apples, per lb., 3s. to 6s.; Tomatoes, per doz., 1s. to 2s.; Walnuts, per bushel, 12s. to 20s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 1s. 6d. to 3s.; Beans, Kidney, per half sieve, 1s. 6d. to 2s.; Beet, Red, per doz., 1s. to 2s.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 3s.; Cucumbers, each, 3d. to 6d.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horse-radish, per bundle, 3s. to 4s.; Leeks, per bunch, 3d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 4s. to 6s.; button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 9d. to 1s.; Potatoes, per bushel, 3s. 6d. to 5s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsify, do., 1s. to 1s. 6d.; Scorzonera, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, 4d. to 8d. Vegetable Marrows, per doz., 1s. to 2s.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ON THE VASE CULTURE OF IVY.

By JAMES M'NAB, Royal Botanic Gardens, Edinburgh.

Ivy, in one form or another, has long been employed as a decorative plant with much success, both in and out of doors; but there is one way in which this truly useful climber deserves more encouragement than it has hitherto received, viz., the vase culture of it in Moss and water for drawing-room purposes. I have known the same pieces of Ivy to be employed in this way for four or five years, and a very pleasing effect they produced. I have mentioned this circumstance to several persons, but its cultivation in this particular style does not seem to be gaining ground so fast as it ought to do. For this purpose the Ivy should be grown in long opaque glass jars or vases, and it is essential that such vessels should be wide at the top, so that the plants, after being properly rooted, can be taken out and the jars cleaned when necessary. In the



Vase filled with Yucca and Irish Ivy.

selection of Ivy for vase culture, long pieces with small leaves are to be recommended; those taken from the stems of trees where the points are inclined to be pendent will be found to answer best, such Ivy having generally stout stalks covered with aerial roots. Each vase, according to its size, should contain three, four, or five pieces, each piece being rolled up separately in a small portion of Hypnum or Sphagnum Moss, the latter being preferable. After this, tie all the pieces loosely together in a clump to suit the width of the vase, and place them in it so that the ball of Moss does not reach within 5 or 6 inches of the bottom. It will be necessary to keep the water in the vase about half-way up the Moss till the cuttings are properly rooted. From the Moss, the roots will extend into the water below, and it will be found that those roots produced in the Moss and water will be quite sufficient to nourish the plants. Cutting plants whose roots have been produced in soil, if lifted and placed in vases, will ultimately do well; but the probability is that the roots will die and the plants for a time sicken until new fibres are formed capable of enduring Moss and water culture. After the Ivy is properly rooted, the glass jars may be kept full of water, and sprigs of flowers may also be inserted in them. The water and flowers may be changed when necessary, and even the Ivy, whose roots ought now to be a solid mass, may

also be taken out and replaced at pleasure without injury. With dark-coloured vases, the variegated Ivies may be successfully employed, if treated as recommended for the green variety. The accompanying sketch, made by our artist, of one of two vases which may now be seen in the Pine Apple Nursery Company's grounds at Maida Vale, is a tasteful illustration of the way in which Ivy may be used for vase decoration out of doors.

COVENT GARDEN FLOWER MARKET.

EVERY trade has its speciality. The supply of London with food is a frequent topic of wonder or complaint, as the case may be. But how about supplying London with flowers? Covent Garden Market, as we all know, is the centre of the trade, and the principal avenue is the spot where the most fashionable bouquets are obtained. There, if we may use the phrase, is the London habitat of the Gladiolus, now in perfection; the Camellia; and, in their due season, the very early Violet and the Primrose. There often may be seen walking, for a visit of inspection, many of the celebrities of the day. But behind all this retail trade, as we may call it, there is a large mercantile interest—the dealers who supply the London public with flowers, obtained principally from the market. The trade is a peculiar one; from the first-rate florist to the poor man who hawks with his barrow, all are more or less dependent upon the market; and, in view of the peculiar requirements of this special branch of business, a most important extension, or rather an adjunct to the market, has recently been carried out by the Duke of Bedford, the owner of the property. It is not yet by any means completed, but the portion erected is in thorough working order. The Hummums is the name of a hostel of historical fame, and, in the corner adjoining, our readers have doubtless noticed an open wooden fencing, enclosing an entrance to the new building. As the market hours are from 5 a.m. to 9 a.m., we need not say that this peculiar spot is not much frequented by the fashionable public at such uncanonical hours. But, nevertheless, important business is done there. The new building, designed and erected in the course of the last year or two by Messrs. W. Cubitt and Co., of Gray's Inn Road, occupies a piece of land which runs through from the angle of the market before alluded to into Wellington Street, a distance of two hundred feet, and at the widest point of the plan (which is somewhat irregular) measures 76 feet. The basement, is covered with groined brick arches, and the floor is of asphalt. The central section, 120 feet by 76 feet, is 70 feet high to the ridge, lighted by semi-headed clerestory windows and a lantern-light, with ample provision for ventilation. The general internal construction is of cast iron, piercing segment girders springing from column to column, and carrying the superstructure. The total number of stalls for the sale of flowers wholesale—i.e., by the dozen or the hundred of pots or plants—is about 270. Many of these are occupied by regular dealers; but some of them are let at a weekly rental to very poor people—the men who make their living by collecting Ferns and wild-growing plants of similar character. The early hour at which the business is done, of course, in the winter season, requires the aid of gas, and a large number of powerful star lights is accordingly provided. The external elevation towards Wellington-street is the most important—three lofty semi-circular arches, the windows glazed with Hartley's plate-glass, white brick facings, with dressings in Portland stone and terra-cotta. We doubt not that many a man passes this building with a certain feeling of curiosity as to its purpose and destination; but if he will only take the trouble to get up early enough for a call in market hours, he may be somewhat enlightened as to how to obtain flowers in London.

COWAN'S LIME-KILN HEATING.

As there has been a considerable amount of interest excited about this system of heating, we have much pleasure in giving insertion to the following letter, just received from Mr. Cooke, gardener at Ardferd Abbey, near Tralee. He says:—"The apparatus which has been erected here on Cowan's patent compensating system of heating horticultural and other buildings, and which has been at work for the past three weeks, is a complete success, both as regards the thorough burning of the limestone and its great heating powers. It is so simple, too, in its arrangement, that a common labourer can easily manage it, and I find that the lime produced from this kiln is of superior quality to lime burnt in the open air." We may state that Mr. Cooke is the first who has really started one of Mr. Cowan's apparatuses. Though a good many of them are in course of erection, none, except his, we believe, has been actually started, and we are glad to find that he corroborates all that has been stated in its favour.

NOTES OF THE WEEK.

— WE have received from Mr. Ellacombe a lovely bloom of *Exogonium Purga*, which is hardy at Bitton. Its flowers have a very long slender tube compared with the size of the limb, and are of as fine a violet-purple as that of Horsfall's *Ipomæa*, a genus to which this plant is closely related. Its tuberous roots furnish the true Jalap of commerce.

— THE large Vinery at Chiswick is just now a sight well worth seeing, the crop being both fine and abundant. The outside borders were renovated a year or two ago, and some of the Vines that were planted inside were removed so as to give more room to those remaining, the result of which is increased vigour and fruitfulness.

— JUST now, when many hardy flowering shrubs are too frequently overlooked, we are pleased to see *Abelia rupestris* flowering freely in Messrs. Lee's nursery at Hammersmith. It is a plant worth adding to every collection of autumnal-flowering shrubs.

— *HEMANTHUS COCCINEUS* is just now bearing ten fine flower-spikes in the Heath-house at Kew. Though not uncommon, this plant is seldom seen in anything like the fine condition now indicated.

— FINE masses of the graceful *Arundo Donax* may now be seen in various places round London. They grow from 8 to 10 feet high, and have a striking appearance associated with Conifers and hardy evergreen shrubs.

— THE beautiful blue-flowered *Thunbergia lanrifolia* is now finely in bloom at Chiswick, in a cool house. It is not, by any means, an uncommon plant, but its growing and flowering in a cool house may be noteworthy.

— MESSRS. BELL & THORPE, of Stratford-upon-Avon, are about to sell off their nursery stock and to apply themselves wholly to the manufacture of their imperishable labels. The sale is to commence on Wednesday next.

— MESSRS. JACKMAN, of Woking, have raised, and will soon "send out," a race of Sweet-scented Clematises, with large flowers. Among the odours are some somewhat like those of the Primrose and the Violet.

— THE designs for laying out the new park at Leeds, for which three premiums of two hundred, one hundred, and fifty guineas were offered last March by the Corporation, were last week exhibited in the Town Hall. They have been supplied by seventeen competitors, and exhibit a great variety of design, the estimated outlay also ranging from £53,670 to £84,600.

— *POLYCYCNIS LEPIDA* is now prettily in flower in the Orchid houses of the Royal Horticultural Society at South Kensington. Though not a showy Orchid, it is by no means an uninteresting one, bearing, as it does, from ten to fifteen of its singularly-shaped flowers on an erect nodding spike. It is rare in collections, though well worth growing.

— ACCORDING to the *Grocer*, a French engineer, one M. Jouglet, has discovered a method of making artificial sugar equal to the produce of the Sugar-cane or the Beetroot. The cost is calculated at one farthing a pound, and the invention has already been sold for 1,200,000 francs to a company, who intend to work the patent on a grand scale.

— MR. W. BULL has succeeded in again importing a large quantity of Liberian Coffee plants and seeds from the Western Coast of Africa. The seeds, on being roasted, proved to be of excellent quality, and have the additional advantage of being at least twice the size of those borne by the common Coffee plant. The leaves of this plant are very large, and in form remind one of those of *Magnolia grandiflora*. Mr. Bull is about to ship them to Ceylon for further experiment. It is expected that this species, when better known, will be largely cultivated, and that it will bear much heavier crops than *C. arabica*.

— THIS week the public gardens, purchased and beautified by Mr. Julius Brencley, of Milgate Park, Maidstone, and the museum, containing his collection of birds, shells, ivories, bronzes, &c., together costing upwards of £20,000, were thrown open to the public, amid great rejoicing. At half-past two in the afternoon the mayor and corporation of Maidstone walked in procession from the Town Hall to the gardens, and declared them open. At four there was a luncheon in the Town Hall, and in the evening a *conversazione*, which was held in the museum, papers being read by Mr. F. Buckland, Inspector of Salmon Fisheries, and Mr. C. Roach Smith. The members for the borough, Sir Sydney Waterlow (the Liberal candidate), and Major Ross and Colonel Stanley (the Conservative candidates), were present. The munificent donor did not live to see the completion of a work in which he had taken so great an interest. He died at Folkestone in February. Shortly before his death he published "Jottings during a Cruise of Her Majesty's ship *Curaçoa* among the South Sea Islands in 1865."

— OUTDOOR FIGS have seldom been so plentiful and so fine as they are this year, proving that they enjoy a dripping season as much or more than a hot one.

— CONTINENTAL fruit-growers have not been slow to recognise the merits of the Early Rivers' Peach, a favourable notice of which, accompanied by a coloured figure, appears in this month's number of the Belgian *Bulletin d'Arboriculture*.

— WE have just received from Messrs. Backhouse and Son, York, a specimen of a new *Erigeron* (*E. macranthum*) from the Rocky Mountains. The flowers are large, with pale pinkish rays, and are not so handsome as those of *E. speciosum*. As a hardy border plant, it will, however, no doubt, be found useful.

— WE were glad to see the other day about a quarter of an acre of stout plants of the fine old rosy *Spiræa* (*S. venusta*) in Mr. Anthony Waterer's nursery at Knaphill, Woking. It is one of the most uncommon of really good old border flowers, and, being as hardy as the common Meadow Sweet, should have a place in every garden. The late blooms are still on some of the plants.

— WE are informed by Mr. Archibald Fowler, of Castle Kennedy, that a plant of New Zealand Flax (*Phormium tenax*), which is quite hardy in that part of Wigtownshire, and which flowered early this summer, is now bearing upwards of fifty seed-pods, which, at a short distance off, look not unlike the pods of ordinary field Beans when nearly ripe. The spike on which they are growing is fully 8 feet in height.

— ACCORDING to a statement of M. Van Hulle in the *Bulletin d'Arboriculture*, Walnuts are, in general, very scarce this year on the continent. During a recent tour through Germany, the Tyrol, Austria, Hungary, Italy, and Switzerland, M. Van Hulle found the trees almost everywhere bare of fruit, except on the left bank of the Rhine, in particular between Coblenz and Mayence, where the crops were so heavy that the branches had to be supported with props.

— THE Knight of Kerry writes to us from Glanleam, Valencia, as follows:—"I wrote to you last year describing my *Fuchsia Riccartoni* as having, in the previous summer, attained a circumference of 115 feet. I now beg to report progress. At the end of the season of 1872 it measured 124½ feet, and I have just this moment again had it carefully measured, and find it to be 132½ feet. It was late in coming into blossom this year, but it has amply made up for its tardiness, for it is a perfect blaze of crimson. In the same grass plot we have an *Hydrangea* measuring 48 feet in circumference, which I am told is an unusual size.

— THE inevitable ultimate assertion of Nature over man's greatest triumphs of brick and stonework has seldom been more plainly put forward than we have seen it a few days since at Chelsea, a hundred yards or so above Battersea Bridge. On the lower abutments of the embankment there many native plants have taken root—Grasses, *Lythrum*, *Polygonum*, *Barbarea*, *Cochlearia*, *Rumex*, and some other smaller species which we were not able to distinguish in the distance. On the end of one partially decayed beam of a landing-place, half-submerged at high tide, we counted no fewer than five species growing as vigorously as we have ever seen them in the most favourable soil.

— DURING the past week we have seen a fine collection of *Stapelias* in Mr. Peacock's garden at Hammersmith, among which the following, representing as many sections of the genus, were conspicuous, viz.:—*S. tubiflora*, pale yellow in colour, densely set inside the tube with purple glandular hairs; *S. maculosa*, flat form, blotched with deep purple on a yellow ground; *S. erusciforme*, a small deep purple kind, the flowers being wrinkled like crape; and *S. fasciata*, a large flowered kind with revolute segments of a dirty yellow colour, barred with pale brown. Mr. Peacock's collection of these interesting though repulsive plants, on account of the bad smell emitted by them, is one of the largest and healthiest in existence.

— THE design for the new Manchester Fruit Market, which competed for the premiums offered by the Markets' Committee, have been exhibited in the large room of the Town Hall. Four premiums were offered, for which there were thirteen competitors. The first premium, £200, was awarded to Messrs. Spekeman, Son, and Hickson, Cross Street, Manchester; the second, £150, to Messrs. Mangnall & Littlewood, Norfolk Street; the third, £100, to Messrs. Clegg & Knowles, Cross Street; and the design for which the fourth, £50, was awarded was the joint production of Messrs. Alley & Wilson, Cross Street, and Mr. A. H. Davies Colley, Chapel Walks. The site of the new market is a triangular piece of land, extending from the junction of Deansgate and Victoria Street to St. Mary's Gate, which forms its base, and embracing all the ground lying between those two streets. The market is intended to occupy about 2,000 square yards of the space, and the remainder is to be appropriated to shops, offices, &c.

THE INDOOR GARDEN.

ROEZL'S ODONTOGLOT.

(ODONTOGLOSSUM ROEZLII.)

This is a valuable addition to the small group of *Miltonia*-flowered *Odontoglots*, of which *O. Phalaenopsis*, and the still more effective *O. vexillarium*, are the only species at present in our collections. It is another of Mr. Roezl's discoveries on the western slopes of the Andes, and very appropriately bears his name. Judging from the flowering specimens of it which we recently saw in Mr. Bull's Orchid houses at Chelsea, it appears to be much more robust and vigorous in constitution than either of its congeners. In general habit it somewhat resembles *O. Phalaenopsis*, but, in addition to the difference cited above, it has broader leaves, which are a foot in length, of a bright and decided green colour above, while below they are of a glaucous tint, and striped with fine dark green lines. The pseudobulbs are flattened, and of the same size and colour as those of *O. Phalaenopsis*. As regards the flowers, they more closely resemble those of *O. vexillarium* than *O. Phalaenopsis*, but from the former, *O. Roezlii* differs materially in habit, being much narrower in the foliage than that kind, and also in having the dark green veins, to which we have already alluded. Some might, however, possibly regard it as a pale flowered variety of the *O. vexillarium*; but, besides its smaller flowers, with more sharply-pointed segments, the darker green-veined leaves serve to distinguish it from that variety at a glance, even when not in bloom. The accompanying illustration shows the contour of the flowers, and general character of the plant, though, as a matter of course, it does not express the chaste purity of the snowy blossoms as they appear in reality on the plant itself. The sepals are about an inch or an inch and a quarter long, sharply pointed at their apices, and of a pearly whiteness. The petals are as long as the sepals, slightly broader, and contracted a little near the middle. Like the sepals, they are white, with a large deep rosy-purple blotch at the base of each. The lip is large, bilobed at its apex; and

sagittate at the base, as shown in our figure. The crest is of a clear lemon-yellow tint, marked with red or crimson interrupted lines, the rest of the broadly-expanded lines, together with the column, being pure white. It is, to all appearance, a most robust grower, and, when thoroughly developed, will, in all probability, prove a profuse flowerer, as the small, though vigorous, plant from which our sketch was taken, bore two spikes of flowers. It likes a moderately cool and moist atmosphere, but should be protected from cold draughts. F. W. B.



Roezl's new Odontoglot.

Conservatory

Rhododendrons.—I have just read the letter of your correspondent, "An Old Soldier," on conservatory Rhododendrons in your issue of the 13th inst., and shall be very glad if he will inform me what he considers to be the true *Javanicum*, and whether I shall find it figured in any of the English or foreign illustrated periodicals. I am acquainted with two varieties of *R. javanicum*, both of them, I think, figured in Van Houtte's "Flore des Serres" under the names respectively of *Javanicum Veitchii*, bright golden-yellow, and *Javanicum aurantiacum*, deep orange. The latter variety I flower regularly each season, of the former I once possessed a small plant, but it died without blooming, and I am now informed by Messrs. Veitch that they are unable to supply it, and that they do not know where to obtain a supply. I had also sent me, some time ago, a small plant of a narrow-leaved variety of *Javanicum*, under the name of *angustifolium*, but it has never bloomed with me, so I am unable to say what the flower may be, or whether it is different from, or identical with, either of the above-named varieties. I may also add to the list mentioned at page 176 the beautiful and most distinct variety not, I think, included in that list, of *R. Lobbi*, requiring, perhaps, a little more heat than *Javanicum*, but very free-flowering and well worth adding to any collection of these beautiful plants. I may also inform "An Old

Soldier" that I possess the hybrid he mentions as *Smith's aureum*, and that he can obtain plants of it from Messrs. Veitch, of Chelsea.—W. E. G.

Fuchsia gracilis variegata.—I noticed at Kew the other day a very pretty effect produced by training a plant of this *Fuchsia* up the stem of a *Dracyna* about 8 feet high. This prettily variegated-leaved *Fuchsia* is also used in other parts of the temperate house as a conservatory climber with the very best results.—P. WALLACE.

THE FRUIT GARDEN.

ORCHARD HOUSE TREES.

By PETER GRIEVE, CULFORD GARDENS.

The Apple.

THE Apple succeeds so well in the open air that it may appear quite unnecessary to grow it in any form under glass. A few, however, of the finer sorts may be grown so, if for no other reason than to give finish or completeness to a collection of fruit trees. Besides, it is found that there are some very fine-looking American varieties of this fruit, for which it would appear that our summers are hardly long enough or sufficiently warm to bring them to their maximum point of excellence, such as the Northern Spy, the Reinette du Canada, the Melon Apple, &c.; while some of our old favourites, such as the Ribston Pippin, Golden Pippin, Golden Reinette, Cox's Orange, the Old, and the Scarlet Nonpareil, are all of them well worthy of being grown under glass. Trees intended for this purpose should be grafted upon the Paradise stock, and potted in soil similar to what has been recommended for the Apricot and other fruit trees; subjected also to similar treatment as regards summer pinching or stopping, &c., until a pyramidal or some other desired form is secured. Under glass, these trees will generally keep pretty free from insect annoyances of all kinds, but should a few caterpillars put in an appearance, they must be picked off by hand; and should (but this is not at all likely) the American blight show itself, burn the plants so effected at once.

The Pear.

The varieties of this much esteemed fruit at present in cultivation are, like those of the Apple, exceedingly numerous; and during most seasons, succeed very well in the open air in this country, being perfectly hardy. But, our climate being exceedingly uncertain during spring, it happens not unfrequently that a ruinous depression of temperature takes place at the very time when the Pear is in full flower; and, although this depression may not last longer than a few hours, it is too frequently found to be quite sufficient to destroy all hopes of a crop of Pears during the ensuing season. The night of the 19th of last May, or the morning of the 20th of that month, affords a memorable example of this nature. A cold and comparatively sunless summer, such as we sometimes experience, is also found to fail to bring some of the best varieties of this fruit to anything like the perfection which they will attain under more favourable circumstances. Soil and climate would also appear to exercise a great influence upon the quality of this fruit, as it is found that some sorts which are really of excellent quality, when grown in the north of England and some parts of Scotland, are worthless and insipid in flavour when produced in the more genial climate of the south; while, on the other hand, the northern summer is neither sufficiently long, nor warm, to ripen many varieties which attain great perfection in the most exposed positions in the south of England.

Pear trees intended for orchard house culture should be all worked upon the Quince stock, which induces a healthy but not over vigorous growth; and they should be potted in good friable loam, slightly enriched with well-rotted manure, and potted as firmly as possible. The pots used should not be too large, on account of their having to be frequently moved about after being potted, say during the month of November. They may then be placed as close together as may be desired, and the pots should be well covered with leaves or dry litter of some sort, and so remain during the winter months. Early in March, should the weather be mild, they may be uncovered and placed at the necessary distance from each other and carefully pruned, and this, followed by judicious stopping and pinching of the shoots during the growing season, will bring the trees as soon as possible into the desired form—that of a pyramid being considered best. When the trees are in bloom, air should be admitted very freely whenever the weather is mild. Under glass, Pears are generally found to set their fruit very freely, and they must consequently be thinned out, taking care not to leave too many fruits upon a tree; but the number should be regulated by the size and the vigour of the

tree. If the trees are allowed to ripen their fruit under glass, it will most likely be exceedingly large and fine in appearance, but at the same time will probably be insipid and deficient in flavour. On this account it is always advisable to remove them into a suitable situation in the open air. This may be done about the middle of June, or soon after that time, when they should be plunged, to the rim of the pots, in light and comparatively dry soil, if possible, and mulched with rich half-rotted manure to the depth of at least two inches. Give water when it appears to be required, but this mulching will to a great extent prevent evaporation, and render water less necessary. But when the fruit is rapidly swelling off, occasional doses of weak manure-water may be given with advantage, and due attention must, during this time, be paid to pinching or stopping the young shoots, in order to secure, or preserve, the desired form of the trees.

Long before the fruit is ripe, the small blue-headed Tomtit may not unlikely take the liberty of puncturing small holes in some of the finest fruits, close to the footstalks, and this of course ensures the rapid decay of the fruits so injured. To prevent this, take circular pieces of thin cardboard, about the size of a half-crown piece. Make a hole in the centre about the size of the stalk of the fruit, and from this hole with a sharp knife make a clean cut through the margin, and slip the stalk of each fruit through this slit into the central hole. This will effectually protect the part of the fruit most likely to be operated upon by this very pretty, but rather mischievous, little bird.

As a rule, it will be advisable to grow only the very best and most handsome varieties of the Pear under glass. The following short list, which may be greatly extended, gives the names of a few of such:—Brown Beurré, Easter Beurré, Beurré Bosc, Beurré Clairgeau, Bergamotte (Huyshe's), Chaumontel, Comte de Lamy, Doyenné du Comice, Duchesse d'Angoulême, large and fine; Forelle, or Trout Pear, very beautiful; Gen. Toddleben, Glou Morceau, Gratioli of Jersey, Louise Bonne of Jersey, Madam Treve, Prince Albert, Soldat Laboureur, Triomphe de Jodoigne, Winter Nelis, &c.

The Cherry.

The wild Cherry is a native of Britain, and many species and varieties of Cherry are also indigenous to the south of Europe, North America, and elsewhere. Few varieties of hardy fruit are more worthy of cultivation under glass than the Cherry. In woodland districts, almost always infested by birds, it is generally a most difficult matter to get this delicious fruit fully ripened in the open air, consequently the protection afforded by an orchard house is what is really required. It is equally well adapted for pot culture, and for the purpose of planting out in prepared borders of suitable soil, and being trained into the form of a pyramidal-shaped tree. The soil used to pot or to plant them in may be similar to that recommended for Apricots, &c., with the addition of a considerable portion of well-pulverised clay. Like the Apricot, the Cherry requires to be grown in a well-ventilated structure to ensure the fruit setting well. But, unlike the Apricot, it is unfortunately subject to the attacks of insect enemies, more particularly the black aphid, for which the only really effectual remedy is fumigation, assisted by frequent syringings, as soon as the fruit is fairly set, and continued until it begins to change colour. On this account a separate compartment is very desirable for the Cherry, which is one of the few fruits of which it may truly be said that too great a variety of them can hardly be grown, as nearly all are good, and yet all are so distinct. All Cherry trees intended for growing under glass should be worked upon the Mahaleb stock (*Cerasus Mahaleb*), which is admitted to be better suited for this purpose than the common Cherry stock. All collections of this fruit should contain at least the following varieties, viz., May Duke, Arch Duke, Royal Duke, Early Amber Heart, Werder's Early Black Heart, Knight's Early Black, Black Eagle, Black Tartarian, Belle de Choisy, Belle d'Orleans, Governor Wood, Ohio Beauty, with the various Bigarreau sorts, all of which are very good. And, as very late sorts, Belle Magnifique, Late Duke, and Morello, may be safely recommended. The latter, when thoroughly ripened, will hang on the trees and keep well up to the middle of October, and is then well worthy of a place in the most choice dessert.

The Plum.

The Plum (*Prunus domestica*) is indigenous to England, and its various varieties are found to succeed admirably when grown under glass. Very much of what has just been said regarding the Pear, applies equally to this fruit, the bloom of which is so frequently destroyed by spring frosts in the open air. This circumstance renders it advisable to cultivate at least a portion of the trees in the orchard house. They may be grown in pots of similar dimensions to those recommended for Pears, and the soil or compost employed may also be much the same. If any alteration is made in this respect it might, possibly with advantage, be rendered somewhat richer. They will also require the same attention as regards watering, stopping of the young shoots, &c., as other varieties of orchard house trees. The most desirable form in which to train the tree is that of a pyramid. Under glass they will generally set fruit in great abundance, which must be thinned out carefully. By all means avoid leaving too heavy a crop, which will be sure to render the fruit less fine, and to some extent deficient in flavour.

The Plum under glass, as well as in the open air, is subject to the attacks of a bluish aphid, or smother fly, as it is sometimes called, which generally yields, however, to repeated syringings with diluted tobacco-water, or to fumigation. On this account it is also advisable to dress the trees after they have been pruned, in the same manner as has been recommended in the case of Peaches, &c. All, or a portion, of the trees should be removed into the open air in June, and plunged and treated in all respects similar to the Pear; but, in the case of the Plum, it will be necessary to return them again into the orchard house, so that the fruit may complete its ripening process, and be protected from the ravages of wasps and birds, which during some seasons, unless the fruit is in some way protected, will destroy it as fast as it ripens. In the case of late sorts, such as Coe's Golden Drop, &c., it is advisable to allow the trees to remain under glass until the fruit is ripe, abundance of air being always freely admitted to the structure. Where the fruit may hang upon the trees until it shrivels it is often found to be delicious. The trees should be placed out of doors for a time, as the fruit is gathered from them. All varieties of this fruit will succeed well under orchard house culture, but the following list contains the names of a few of the best table sorts only, selected so as to give as prolonged a season as possible:—*Early Plums*: Belgian Purple, Drap d'Or, Claude Hâtive, Early Favourite, Golden Gage, Peach Plum, Violet Plum, Greengage, Rivers's Early Prolific*.—*Plums, medium as to ripening*: Bonne Bouche, Guthrie's Aunt Ann, Huling's Superb, Jefferson, Reine Claude de Bayay, Reine Claude Violette, Washington.—*Late Plums*: Coe's Late Red, Coe's Golden Drop, Fellemborg, Ickworth Impératrice, Impératrice Blue, Guthrie's Late Green.

The Fig.

The Fig was introduced into this country about the year 1548. It may be grown successfully in the orchard house in 15 or 18-inch pots, in the form of dwarf bushes, or, better still, as low standards, with clean stems about 15 or 18 inches in length. The shoots will require to be thinned out, and those remaining must be pinched or stopped occasionally, in order to get the plants into their proper or desired form. The soil may be the same as has been recommended for other fruit trees, and should be surface-dressed with rich manure once or twice during the time that the fruit is swelling, when they should also be supplied with abundance of water, which may, to some extent, be withheld when the fruit begins to approach a state of ripeness, when great care should also be taken to prevent the fruit from becoming wet, by discontinuing syringing, &c. Not being very liable to the attacks of insects, continuous syringing is not required; and should the brown scale attack the foliage (which it sometimes does), it should be washed off with a sponge and tobacco-water. In an orchard house without artificial heat, only one crop is to be expected in a

* This Plum should be in every collection; and, although possibly not a table fruit strictly speaking, may, nevertheless be used for this purpose. Its productiveness is really extraordinary, as it hardly ever fails to produce a heavy crop, even when all other sorts grown under similar conditions, more or less fail.

season, which will probably ripen from the middle of August to the beginning of September, and to secure this it may be advisable to keep them in the warmest part of the house. The best sorts for orchard house culture are the Early Violet, Lee's Perpetual or Brown Turkey, and White Marseilles; the Castle Kennedy variety might also be tried.

The Mulberry.

The common black Mulberry is a native of Italy, and was introduced into this country about 1548. In many gardens this rich and delicious fruit does not ripen well, and is very apt to drop off prematurely. But it is found that when grown under glass it attains a greater size, and is much improved in flavour, as well as in colour. It is well adapted to orchard house culture, is by no means particular as to soil, and should be grown in pots in the form of a pyramid or dwarf standard tree. It ought to have abundance of water until the fruit shows signs of ripening, when less should be given; but this must not be withheld to a great extent, or the fruit will be likely to drop off.

BARREN FIG TREES.

WHEN asked to prescribe for barren Fig trees, my first question is—Are the leaves of your tree much divided, because, if so, you have probably got the Brunswick? Discard it, and plant the Brown Turkey, which will produce ten times as much fruit. Now, this is the advice I should tender to "Paxtonia" (p. 217). If the sort is right, follow Mr. Westland's counsels. If not, do not take Grosse Verte, merely because it stands first in his list. As regards flavour, it certainly deserves its foremost position, but it is an inveterate cracker, and requires the most careful attention as to watering. The air also must be kept dry, and considerable heat given. It is suited only for an ardent cultivator, who can brook frequent disappointment. Under glass, with little heat, the three best are in Mr. Westland's list. Placed in the order of their ripening, they are Early Violet, White Marseilles or Raby Castle, and Brown Turkey. Where there is little heat, the summer or first crop cannot be dispensed with, and all these ripen two crops annually, the first two even without heat. I consider Raby Castle and Marseilles the same. The only difference I know is the length of the footstalk, which is a very variable mark. As to Cœil de Perdrix, it is a noble plant, with large leaves and short-jointed wood. But it has no summer crop, and the fruit is so close on the bough, that the lower part ripens with difficulty, and long after the top. If the fruit cracks, it ripens better; but split fruit mildews, unless the air is dry up to red-spider point, and even then the fruit becomes smothered with flies and ants. By cracking, I mean splitting from the eye downwards; mere minute transverse cracks over the skin are good signs. Where there is heat enough to ripen off an autumnal crop in August and September, I recommend the White Ischia, which has every conceivable good quality, except size and beauty. The former, however, is amply compensated for by its amazing fertility. If beauty joined with excellence be desired, take Panachée and Colonel di Signora nera. Both of these, however, are later than White Ischia. G. S.

THE GOLDEN CHAMPION GRAPE.

New flowers, fruits, or vegetables must be estimated at their proper value; and this should be done, at the risk of offending or even injuring their raisers and those interested in their sale. Writers must write for the public good, entirely oblivious to private interests. If truth promotes the latter, well and good; but if not, it must, nevertheless, be uttered. One has only to make sure of his facts and of there being a necessity to promulgate them. Nothing can be more obvious than the need of caution in the assessment of the value of new varieties. The puffing of novelties, because they are new, is at the present moment the greatest nuisance in horticulture. It affects all classes. Even our fruit and floral committees and greatest authorities—practical and scientific—have hardly escaped from its influence. Hence we have new things innumerable not equal to old ones, and one of the highest services that can be rendered to horticulture is the weighing of new things in the balance of practice and recording the results. It thus happened that some weeks ago, in reply to an article that appeared in THE GARDEN on "Grapes Worth Growing," I challenged the writer's high estimate of the Golden Champion Grape, and counselled planting fewer than he recommended. Such a challenge could hardly escape criticism, and it has brought down upon me two sturdy combatants—the raiser and Mr. W. P. Ayres. Perhaps some apology is due from me to the

raiser, for, in drawing a strong contrast in favour of the Duke of Buccleuch in comparison with the Golden Champion, I intimated that, while two large Vineries were furnished with the former, few or none of the latter were grown at Clovenfords; whereas, it seems that some are grown, and that a considerable number continue to be sold. It follows, therefore, that Mr. Thomson has still confidence in the Golden Champion—a confidence so far justified by the fine examples of this Grape shown at Manchester. It is quite possible that the Golden Champion did not at first reveal any of its peculiar defects, either at Dalkeith or Clovenfords, and it is certain that it was sent out in good faith with the certificate of the fruit committee of the Royal Horticultural Society attached to it as a first-class new variety. Here it may be assumed the raiser's responsibility ended. And in discussing the merits and demerits of this or any fruit, I intend to steer quite clear of any question of motive in the raiser, with which I have nothing whatever to do. By their fruits we shall know Grape Vines assuredly, and the fruit of the Golden Champion is so generally spotted as to render it comparatively worthless. I write this after seeing the fine examples at Manchester and elsewhere. Those examples of success but confirm the rule of general failure. I, like others that Mr. Thomson adverts to, prefer the evidence of my own eyes, and that of others equally trustworthy, who have either written or spoken to me of their utter failure with this Grape. I have no interest in writing down a good fruit. My interest, or rather my pleasure, would be in writing it up. But, if truth points the other way, nothing shall hinder my writing it down. Assuredly it put in a good appearance at Manchester, and I have seen it good in several other places; and I grew three fine bunches of it myself last year, yet have I cut out two strong Vines, and only reserved one. And at Manchester the opinions of cultivators were strongly antagonistic to this Grape. Some said it did well in England, some in Scotland, and more that it did alike badly in both countries. I am sorry I cannot accept Mr. Ayres's panacea of grafting as a cure for spotting. I worked a Champion on a strong-growing Hamburg, and the result was much worse than on its own roots. I heartily wish it were otherwise, for a new sparkling Grape of such noble appearance would be a decided acquisition at dessert. I hope we shall find such a Grape in the Duke of Buccleuch, which appears to possess all the good qualities of the Champion, without its faults. Two considerations have induced me to speak out thus emphatically about this last-named Grape—one to prevent disappointment, the other to vindicate the skill and character of those who have failed. The Golden Champion has proved an Apple of discord in many establishments, and it is only just to the profession when circumstances enable any one to garner facts; that these should be stated to prove that constitution, rather than skill, is at fault in failing to finish this fine-looking Grape. D. T. FISH.

Fruit Prospects in America.—Of Apples with us the prospect now is that they will be dear. Do you know that we rarely see Newtown Pippins offered in the markets? The growers of them are few, and they sell directly to shippers. Besides, owing to our now having so many better Apples, they are not so much sought after as formerly. Of Pears really good sorts are never cheap. Do you know what a fine Pear the Vicar of Winkfield (Le Curé of some) is, if properly managed? We allow it to remain on the trees until hard frosts occur, and then treat it just as one would a winter Apple, when it will be found brisk and excellent.—GEORGE THURBER, New York.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Fruit Crops at Bracebridge Vicarage, Lincoln.—Cox's Orange Pippin Apple is splendid with us this year; and Lord Burleigh fruits well, but shows a strong predilection to canker. Russian is, perhaps, the best early kitchen Apple we have met with excepting Lord Suffield. Mid-season Pears have nearly all ripened hereabout, and both early and late were bitten by frost. Plums, which are scarce, have been greatly injured, as well as Cherries, by fly.—C. C. ELLISON.

Influence of the Stock on the Scion.—How much, in the case of many fruits, the quality is influenced by the stock, I saw last week, when we gathered here, among other Pears, the Rokeby. This sort was taken from a tree worked on the Pear-stock, and was, in every stage of ripening, very bad, being dry and mealy; while the same sort, worked on the Quince, in the same ground, was full of juice, melting, and deliciously flavoured, and was a fortnight earlier.—G. W., *Merrett Nurseries*.

The Early Richmond Cherry.—What the Bartlett is among Pears, or the Concord among Grapes, the Early Richmond is in the list of Cherries. The fact of its superior excellence for cooking purposes has made it one of our most popular fruits wherever it has been tested. Large orchards in the Western States prove its popularity in that part of the country, and we have yet to learn a single exception to the general estimate in which it is held. The tree is perhaps more hardy than any other variety, excepting only the Morello, and its regular crops of fruit entitle it to precedence for profit. It begins to bear at a very early age, and when other kinds are terribly injured by the black knot, the Early Richmond is almost exempt. It is not, at least, so liable to the disease as others of this class.—*New York Tribune*.

THE ARBORETUM.

SHRUBS OF MAGELLAN AND CHILOE.

In the very interesting "Notes on the Natural History of the Straits of Magellan," by Robert Cunningham, M.D., naturalist to H.M.S. Nassau, mention is made of several plants, which, if introduced into England, are certainly only in private collections. I venture, therefore, to inquire, through the medium of your journal, whether *Berberis ilicifolia* exists in a living state in England. It must be a strikingly fine species, according to the writer, who describes it as bearing flowers sometimes as large as Cherry blossoms, of a splendid orange-yellow hue, varying to flame colour, in corymbs; the plants attaining a very large size, sometimes as much as upwards of 10 feet in height. As *Berberis buxifolia*, *dulcis*, *Darwinii*, and others are in our collections, it seems strange that this fine species is not in general cultivation. Again, he speaks of a beautiful *Bignoniaceous* Creeper (*Campsidium chilense*) bearing clusters of rose-coloured flowers. Is this known in England? The following must also be worthy of cultivation: *Bromelia bicolor*, with long radiating green leaves, the inner ones being brilliant red; *Gunnera chilensis*, with dense spikes of orange-red fruits; a tall shrub, *Citharexylon cyanocarpum*, with glossy dark-green leaves, and clusters of splendid bluish-purple berries; *Triacspidaria* (*Crinodendron*) *Hookeri*, a low tree, producing handsome solitary drooping bright crimson flowers. All these seem desirable plants, and would be worth the attention of collectors. Many other things described are well known to us, such as *Mitraria coccinea* and *Sarmienta repens*, though, I presume, neither have been tried in the open air in South Devon or Cornwall, where the glorious *Embothrium coccineum* thrives with much vigour. Dr. Sutherland speaks of a second species, *Embothrium lanceolatum* as the handsomer of the two. Is this in England? A *Tigridia*, with pale bluish-purple flowers, must also be valuable, together with numberless fine herbaceous plants; and it is worth noticing that the charming *Lapageria rosea*, bore unharmed the fumes of smelting houses, which had completely destroyed the vitality of the tree that supported it. It is pleasant to read of our well-known favourites, *Berberis Darwinii*, *Sida* (*Abutilon*) *vitifolia*, *Philesia buxifolia*, *Buddleia globosa*, &c.; but there must still exist in these regions numberless lovely things that would add beauty to our conservatories, if not to our shrubberies and gardens.

A DEVONIAN.

Fine specimens of Conifers at Penny Hill, Bagshot.—This place is remarkable for its beautiful Coniferous trees, some of which I have measured, and find their dimensions to be as follows:—*Juniperus japonica alba*, 7 feet by 5 feet 6 inches; *Thujopsis Standishii*, 9 feet by 6 feet; *Retinospora pisifera*, 15 feet by 14 feet; *Thujopsis dolabrata variegata*, 7 feet by 5 feet; *Abies Alberti*, two fine specimens, 25 feet by 15 feet; *Abies lasiocarpa*, 22 feet by 9 feet; *Sciadopitys verticillata*, 8 feet by 6 feet; *Thuja gigantea* (Lobbi), two fine specimens, 25 feet by 10 feet; *Libocedrus decurrens* (*Thuja gigantea*), 20 feet by 8 feet; *Abies grandis*, 17 feet by 16 feet; *Wellingtonia gigantea*, 40 feet by 20 feet. There are also at this place some fine specimens of Silver and Gold Hollies, 16 feet in height, and from 5 feet to 6 feet in diameter.—W. H. BABBAGE.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Fine Umbrella Pine.—There is a specimen of this Pine (*Sciadopitys verticillata*) 9 feet high in Lady Williams's garden at Tregillo, Cornwall.—H.

The American Arbor-Vitæ as a Hedge Plant.—This makes a very close graceful hedge when well kept, and is very hardy; strong winds are apt to open it too much if in exposed positions, or when allowed to grow too free.

Golden Yew on Common Yew Hedges.—Grafting the Golden Yew here and there on shoots allowed to grow up from hedges of the common Yew is frequently practised in the great Surrey nurseries. The practice deserves adoption in private gardens.—V. E. R.

The Green Weeping Holly.—This valuable evergreen weeping shrub is, like many other weeping trees, not likely to receive the notice it deserves till good specimens are frequently seen. One of the best we know of is on the lawn in Mr. G. Jackman's nursery at Woking.—W.

Deutzia Hedges.—*Deutzia scabra* is a very attractive plant when in bloom; it is quite hardy, forms a dense mass of foliage, and appears eminently adapted for a hedge or screen. It bears the shears with impunity, puts out its foliage early and holds it late. Those who desire a neat little hedge or screen where animals cannot injure it, will find this excellent for the purpose.

Leaf-pictures in Autumn.—The commonest Sumach (*Rhus typhina*), often seen in our gardens, but rarely valued and used as it deserves, is a tree much valued in America and Canada for the brilliancy assumed by its leaves in autumn. From recent observations of this tree in Surrey, even after the late cold rains, I am led to say, that I have never seen more brilliant leaves on the tree in America or Canada than it bears with us. This is also true of the Virginian Creeper and other American trees. The beauty of our own native trees in autumn being also of a very high character, one is led to ask—why do we not plant with a view of producing pictures of foliage in the autumn in our parks and gardens?—W. R.

GARDEN DESTROYERS.

THE PLUM MOTH.

(TORTRIX PRUNIANA.)

In many gardens the Plum and Cherry trees suffer much from the ravages of a small tiny moth (*Tortrix pruniana*), which is figured in the accompanying wood-cut. The larva may be found early in May, or even in April. It is at first pale yellow, but after its second moult it becomes green, or dirty green, or even greyish. The body is covered with small black points, from each of which springs a stiff little hair. The head, the shield on the first segment, the true feet, and the extremity of the last segment are shining black. In its first youth it lives in the heart of the flowers of the Plum and Cherry, of which it eats a portion. When the flowers begin to fade it retreats among the leaves, which it ties together in a bundle. When it arrives at maturity it lines the interior of its leaf-lodging with silk, and there passes into the chrysalis. The latter is brown, not so much elongated as that of most of its allies, with the margin of its segments furnished with minute spines. The figure of the perfect moth, here given, is so characteristic



The Plum Moth.

that a description is unnecessary. The colour of the upper wings is black and white, the black mingled with some dark brown. The lower wings are blackish-grey. It comes out in June or July. There is a second brood in August, of which the larvæ, in the absence of flowers, live between leaves, and transform themselves into the chrysalis on the surface of the ground, under a little Moss or herbage, so as to produce the moth in spring when the flower-buds are on the point of opening. A. M.

Insects and Birds.—Few persons are aware of the innumerable number of insects thus destroyed by birds. The following observations, and several of them are much below the mark, will show this:—The blue titmouse has been watched, and found to feed its young from 3.30 a.m. to 8.30 p.m. 475 times, bringing one large or two or three small insects each time. The thrush from 1.15 a.m. to 9.15 p.m., 206 times. The blackbird from 3.15 a.m. to 8.40 p.m. 113 times. The Mistletoe thrush, from 4.20 to 8 p.m., sixty-six times, each time bringing several large worms or insects. The sparrow, from two or three to six or eight insects at once, and as this goes on for all the day, and they frequently have two or three broods in the year, they must destroy an immense number. I watched the other day a wagtail catching insects to feed its young, and it took eight or nine into its bill in a minute or two, and had not left off when I turned away. The starlings I frequently observed this spring getting caterpillars for their young.—F. O. MORRIS.

FLORAL CHARMS.

With superstitions and traditions taint.—MILTON.

IN all ages, and in all climes, flowers have been made use of as safeguards against witchcraft and sorcery, and as antidotes to the evil effects produced by the labours of the professors of the "Black Art." The Greeks especially appear to have entertained a firm and steadfast belief in the magical properties, for good or ill, of many plants. With them when any person was seized with a dangerous illness it was customary to fix above the portal of his door a branch of Laurel, of all trees deemed most beneficial in its influence; in conjunction with Rhamnus, it is mentioned by Laertius, in his "Life of Bion," as thus made use of. This latter plant seems to have been designed to keep off evil spirits, against which it was deemed an invaluable remedy. Parsley was deemed a very ominous herb by this people, from the fact, it is supposed, of its having been in great request for decking tombs and burial grounds; it was strewed also upon the dead when laid out for interment, a custom which gave rise to the proverb, when speaking of any one mortally ill, "that he has need of nothing but Parsley." Amongst the flowers commonly used upon graves, to preserve them from the desecration of evil spirits, were Myrtle and, more frequently than any other, Roses. Euripides makes Electra complain that her father's (Agamemnon) tomb had not been protected by boughs of the former, whilst, amid many examples which may be referred for the latter, is Anacreon's ode to the Rose, wherein he particularly states that no ills will approach the tomb guarded by that flower. Herbs and flowers of magical power were much sought after for use in love potions by the Greeks, either to produce affection where it was absent or cure it when it was baleful. The Thessalians were particularly noted for their manufacture of these medicaments, and in "Rhododaphne; or, the Thessalian Spell," one of the most exquisitely melodious, but least known poems in the English language, the whole plot hinges upon the magical potency of the Laurel Rose, than which its author sings, "magic knows no herb or plant of deadlier might." In their attempts to produce love by means of these philtres, the sorcerers frequently destroyed the reason or lives of the persons to whom the decoctions were administered. To allay the passion when once excited their floral antidotes were innumerable; but if the love was inspired naturally and not by means of charms, it was generally deemed incurable. Caucasus and Colchis are frequently referred to by the Hellenic poets as famous for producing magical plants remedial of love. *Agnus castus* is often mentioned as an antidote by Greek writers, whilst among the Latins, Virgil and others allude to the sovereign power which the herb Baccharis possesses against all kinds of fascinations; for this reason it was frequently used in the manufacture of garlands. The Roman physicians, whose duties were multitudinous, had to determine what kind of plants should be admitted into the floral crowns designed to be worn at banquets, and the plants generally selected were Parsley, Ivy, Myrtle, and the Rose, all of which were deemed antidotes to the effects of wine. Myrtle and Laurel both were largely used at the feasts of Greece and Rome. Sprays of the former were steeped in the wine, in the belief that it improved the flavour and added to its invigorating properties. Its berries were also taken medicinally. Laurel was worn by the Delphic priestesses when engaged in their sacrificial rites, during which time they were accustomed to chew some of the leaves, in the belief that they communicated the spirit of prophecy; and the modern idea of putting Laurel leaves under one's pillow in order to acquire inspiration is probably a remnant of the ancient superstition. The Laurel and Bay, for it is difficult to separate them in legendary allusions, so inextricably have the poets and fabulists confused them, were deemed very efficacious in the prevention of illness, and in preservation from lightning and sorcery. The ancient physicians considered the Bay a panacea for all complaints, doubtless holding it in such esteem from the fact of its being dedicated to Apollo, the God of Physic, as well as of music. It is supposed that this association led to the fashion of young doctors of medicine being crowned with Laurel berries (*bacca lauri*), whence the terms of "bachelor" and "laureate." The Laurel had so great a reputation for clearing the air and averting contagious complaints, that during a raging plague Claudius was advised by his physicians to remove his court to Laurentum, so celebrated for its Laurels. The withering of the Bay tree was deemed very ominous, and a sign of death. The great pestilence of Padua was preceded by all these trees rapidly decaying, so tradition alleges; whilst the death of Nero—a lucky event, one would have thought—was also foreshown by a similar phenomenon. Says Shakespeare:—

'Tis thought the king is dead. We'll not stay—

The Bay trees in our country are withered.—*Richard II.*, ii., 4.

With the Greeks it was customary to fix a branch of Laurel over the doorway of any one seized with dangerous illness, in order to avert

death and drive away evil spirits. Theophrastus tells us that the superstitious man of his time was accustomed to keep a Bay leaf in his mouth all day to preserve him from misfortune; and Theophrastus says that lovers were in the habit of burning Laurel as a means of exciting love in the bosoms of those on whom they had fixed their affection; supposed to be an antidote to the powers of lightning, a Laurel chaplet or wreath was ever worn by Tiberius Caesar, who was so fearful of thunder that he would creep under the bed and hide his head in branches of this plant. Webster, in his play of "The White Devil," makes Cornelia say:—

Reach the Bays—
I'll tie a garland here about his head;
'Twill keep my boy from lightning.

Stupid old Culpepper did not overlook this curious belief, and, in his usual quaint way, thus expatiates upon this plant:—"Resisting witchcraft very potently, as also all the evils old Saturn can do the body of man, and they are not a few; for it is the speech of one—and I am mistaken if it were not Mizaldus—that neither witch nor devil, thunder nor lightning, will hurt a man where a Bay tree is. . . . The berries are very effectual against all poisons of venomous creatures, as also against the pestilence, and other infectious creatures" (*sic*). This belief of the Bay tree's power to ward off lightning is very widely spread, and is continually alluded to by writers, even down to the present time. The device of the Count de Cunois, Madame de Genlis says, was a Bay tree, with the motto, "I defend the earth which bears me." A plant much celebrated by the sorcerers of antiquity for its curative and magical qualities was the Black Hellebore; or, as it is sometimes styled, from the fact of its blossoming so very early in the year, the Christmas Rose. It was also named after Melampus, a Greek sooth-sayer or physician of Pylos, who is said to have flourished about a century before Moses, and to have cured the daughters of Prætus, king of Argos, of mental derangement by a decoction made from this plant. From this circumstance it became so famed a medicine for the insane, that *naviga ad Anticyram*, or "go to Anticyra," a place where Hellebore flourished abundantly, was a proverbial form of advice to the hypochondriacal. The Black Hellebore was made use of by the ancients to hallow their dwellings, so as to keep them free from evil spirits, as also their cattle, to keep them free from spells. When the root was dug up many solemn ceremonies were performed, and prayers offered up to propitiate particular deities; a circle was drawn around the plant with a sword, and obeisance made by the devotee to the East. The flight of the eagle was closely watched during the ceremony, for if the bird neared the spot during the celebration of these rites it was deemed an omen of the death, during the year, of the person who took up the plant. Considered to have marvellous powers as "an eye-opener" for the blind, Juvenal sarcastically observes that "Misers need a double dose of Hellebore." It was also supposed to strengthen the brain, whence Carneades, the Cyrenaic philosopher, when he set about refuting Zeno's writings, sharpened his wit by inhaling powdered Hellebore. The Gauls likewise believed in the magical properties of this plant, and before going to the chase, from some superstitious fancy, rubbed their arrows with it.

The Anemone, which was anciently the emblem of sickness, Pliny tells us had wonderful powers attributed to it by the magicians and wise men of yore, and they ordained that everybody should gather the first Anemone of the year which he saw, and repeat the words, "I gather thee for a remedy against disease." He was then to carefully place it in scarlet cloth and keep it undisturbed, unless he became unwell, when it was to be tied either round his neck or arm. Dioscorides, an ancient writer, whose grave assertions as to the wonderful qualities of flowers are most ludicrous, says that the root of Hyacinth will procure hair on bald and beardless men; and a disciple of his declares that the expressed juice of Lily of the Valley root, taken in ale, "soldereth and glueth together the bones of any one soever that chances to have them broken, in whatever part of the body it may be, in a very short space, and very strongly;" and Gerard and the old French herbalists confirm this statement. The Periwinkle, or "Magician's Violet," as it is sometimes styled in France, from the belief that it assists sorcerers in their magical operations, had many medicinal virtues and singular qualities ascribed to it by our ancestors. Ray recommends it for fastening loose teeth; Bacon says that in his time it was common for people to wear bands of green Periwinkle tied round the calf of the leg to prevent cramp; whilst, most wonderful of all, old Culpepper says that it is owned by Venus, and that the leaves, eaten together by man and wife, caused love between them. What a pity the plant has lost its virtue! Of all the magical properties assigned to plants, probably none have been so singular as that ascribed by our ancestors to Moonwort. Our author tells us that "it is believed by many that Moonwort will open the locks wherewith dwelling-houses are made fast, if it be put into

the key-hole; as also that it will loosen the locks, fetters, and shoes from those horses' feet that go on the places where it groweth;" and Culpepper, in his ridiculous old "Herbal," says "Moonwort is a herb which, they say, will open locks and unshoe such horses as tread upon it. This some laugh to scorn, and those no small fools neither; but country people that I know call it 'unshoe the horse,'" and, adds the old rascal, "I have heard commanders say that on White Downs, in Devonshire, near Tiverton, there were found thirty horse-shoes pulled off from the Earl of Essex's horses, being there drawn up in a body, many of them being newly shod, and no reason known, which caused much admiration; and the herb described usually grows upon heaths." After such testimony it cannot excite surprise to find that many magical qualities were assigned to Moonwort, or Lunary. Chaucer alludes to its use in incantations; other authors consider that amongst its virtues might be reckoned the power of curing insanity; and Drayton, introducing it, says:—

Enchanting Lunarie here lies,
In sorceries excelling.

According to Phillips, the Mandrake, or Mandragora, is a species of Nightshade blossoming in April; but in this description, he probably speaks of the briony, used by the English witches and treasure-seekers in place of it, "the veritable *Atropa Mandragora*," as Mr. Hardwick observes in his recent valuable work on "North England Folk Lore," "not being found in the northern portion of the continent of Europe." He also alludes to its supposed power of conferring good fortune upon its possessor—a superstition so strongly prevalent in the middle ages that little figures, formed of the Mandrake roots, and called *Abrunes* by the Germans, were dressed gaily, and consulted as oracles. Brought over to England in the reign of Henry VIII., according to Phillips, they found ready purchasers, "it being pretended that they would, with the assistance of some mystic words, be able to increase whatever money was placed near them." Madame de Genlis tells of a writer who gravely describes these little idols, he saying that they must be wrapped up in a piece of sheet, for then they will bring continuous good luck. The same author, moreover, states "that some people of a weak judgment, and fond of the marvellous, pretend that these Mandrakes pay a tribute of a pistole a day;" but this, he assures us, is not true, all they are able to do being "to make their masters lucky at play, discover to them treasures, and foretell what is to happen." Even with the Greeks this plant had acquired a strange reputation, and they are believed to have named it *Circeium*, after Circe, a witch celebrated in classic lore for her knowledge of the magical influences of herbs. With the Romans this reputation still appertained to the Mandrake, and the ceremonies which Pliny describes as practised at its extraction from the ground much resemble those made use of at the uprooting of the Hellebore. The quacks of antiquity roundly asserted that Mandrake grew only in one small spot in China, whence they were procured at great risk and danger. When the plant was taken from the earth, they declared it gave a dreadful shriek, and the person daring enough to drag its root from the soil was smitten with death. To avoid this fate, therefore, the plant was fastened to the tail of a dog, who had to bear the penalty of the deed. Shakespear thus alludes to the superstition:—

And shrieks like Mandrake, torn out of the earth,
That living mortals hearing them run mad.

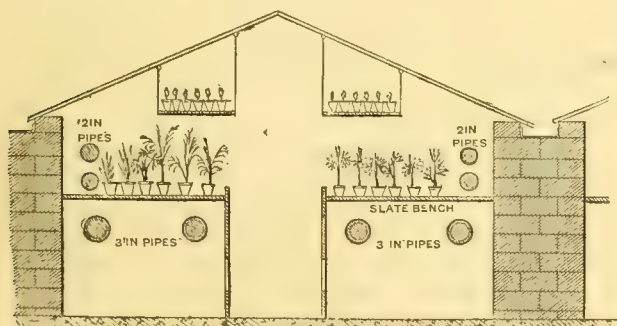
Amongst other marvellous properties assigned to the Mandrake, was that of exciting amorous inclinations; hence Venus was styled *Mandragoritis*, and the Emperor Julian drank its juice nightly, as he himself accords, as a love potion. The Pæony was renowned in ancient fable for its miraculous powers of terrifying demons, who cannot abide near it; even a small portion of the root worn round the neck being sufficient to protect the wearer from all kinds of enchantment. It was named after Pæon, a famous physician, who, with the help of this plant, cured the wounds which the gods received during the Trojan war. Of all flowers celebrated for their powers over evil spirits, none appear to surpass the St. John's Wort, anciently known as *Fuga Dæmonum*, or Devil's Flight, from the belief that it would defend persons from phantoms and spectres, and drive away "auld Hornie" himself and all his mischievous crew. By the peasantry of Europe it is still deemed to be endowed with marvellous qualities; and on the nativity of St. John the Baptist—that is, the 24th June—it is customary for the villagers to gather its blossoms and hang some of them over the windows and doors of their cottages, in the hope that its sanctity will deter malevolent spirits from entering the abode. Sir Walter Scott's ballad, "The Eve of St. John," is a good illustration of the superstitious regard with which this day was noted. Closely connected with this famous plant was also Fern, the seed of any kind of which, if gathered on St. John's Eve, had the faculty of rendering its finder invisible at pleasure. Mr. Hardwick quotes Kelly to this effect:—"In the Oberpfalz it is believed that the St. John's Wort can only be found

among the Fern on St. John's night. It is said to be of a yellow colour, and to shine in the night like a candle, which is just what is said of the Mandrake. Moreover, it never stands still, but hops about continually, to avoid the grasp of men."

Mr. Hardwick gives several instances to prove that these remarkable qualities are still believed in by the peasantry of the North of England, and amongst many other singular stories connected with the Fern, from Grimm's "German Mythology" quotes the following, which is stated to be very popular in Westphalia:—"A man, in search of a foal, passed through a meadow on Midsummer's Eve, when some Fern seed fell into his shoes. He did not return home until the following morning, when he was astonished to find that his wife and children appeared utterly unconscious of his presence. When he called out to them, 'I have not found the foal,' the greatest alarm and confusion followed; for the members of his household could hear his voice, but failed to detect his person. Fancying he was hiding in jest, his wife called out his name. He answered, 'Here I am, right before you. Why do you call me?' This but increased their terror. The man, perceiving that he was to them invisible, thought it not improbable that something in his shoes, which felt like sand, might really prove to be Fern seed. He accordingly pulled them off, and, as he scattered the grains on the floor, resumed his visibility to the eyes of his astounded family." White Thorn and Black Thorn are both sacred plants. J. INGRAM.

SMALL SPAN-ROOFED PLANT HOUSES.

Most plant-growers are aware of the good results attainable in low span-roofed structures where every plant is close under the glass, and consequently fully exposed to the light. Our market growers, who produce hundreds of fine sturdy little



Section of span-roofed Plant House.

flowering plants for the London markets every week during the season, appreciate these structures very highly, and the best of them are content with these low houses, and a series of cool pits and frames for hardier plants. In some cases they may be sunk partly below the ground-level with advantage but this is scarcely necessary except in exposed or bleak positions. If there is no propagating pit on the premises, one of these houses makes an excellent substitute with the aid of a few small one-light frames, or even a few bell-glasses or common hand-lights, while for growing on young fresh-rooted plants they are just the thing. The figure represents a section of one of the small houses of this kind used at La Muette, the Nursery Garden of Paris. There are eighteen of these structures arranged on each side of a covered corridor from which access to each, or all, can be obtained with every convenience of warmth and dryness during the roughest weather. In the winter and spring, these houses are crowded with bedding and other ornamental plants by the thousand. They are about 12 feet wide, and not above 7 feet high in the centre, and are neatly roofed with iron and glass. They may be erected very cheaply either of iron or wood, and we venture to express the opinion that they are far more useful to villa gardeners and amateurs than the usual kind of ornamental structures attached to suburban residences, many of which are entirely unsuited for plant-growing. The figure illustrates the heating and internal arrangements, more clearly than any description could, and we can thoroughly recommend these houses as being, if not strikingly ornamental, at least practically adapted for the growth of most kinds of house-plants. B.

THE FLOWER GARDEN.

CHINA ASTERS.

I HAVE, for several years, grown Victoria Asters for seed, and the more I grow them the better I like them. I sow my seed, in lines, amongst Stocks, Balsams, and other annuals, in a soil bed in the greenhouse, where they get plenty of light and air; and early in May, when the plants are strong, they are dibbled out in lines of colours amidst other things, so that the diverse colours are kept as distinct as possible. I do not grow them in richly-manured ground, such as is necessary when they are cultivated for purposes of exhibition. Looking for seed of the best quality, it is not well to induce a too robust growth, but early flowers of fair average quality, as the chances of ripening the seed whilst the weather is warm and dry are increased; then on each plant the blooms are thinned out to about five in number, as that is enough to produce good quality and fair quantity. It is noticeable in the Aster that the centre bloom is seldom or never so good as are those on the side shoots; where it is so it is always cut away—and those who grow for exhibition specially should always do that in an early stage of growth, and at the same time disbud to about four or five blooms. This is an important element of success. I notice in the Aster that the greatest amount of variation comes amongst the dark-coloured ones—usually, however, breaking into other dark shades, and seldom reverting to light ones. The most noticeable change I have found this year is in the progeny of a red and white striped one that sported out last year, and all of which have this year produced dark blue, light blue, purple, light purple, and reds, but not one striped form. Still the blooms produced are of the best quality, so there is no loss. One of the most effective and most constant to colour is the white, which is not only the earliest, but also the tallest. It is very even in height, which is about 24 inches, and it should always be planted to form the tallest row. Nearest to this in colour is pink, or white tinted with rose; this comes very true to colour, and in height is about 16 inches. I have others of different colours, such as a lavender, which comes very true in colour, and its height is about 17 inches; a pale purple, 16 inches in height, also very true to colour; bright rose, a very effective and taking colour, and a variety which produces flowers of the very finest quality, and which grows some 16 inches in height; dark red, a fine showy colour, very true and most effective; height about 18 inches. Dark blue comes with me rather uneven and untrue in colour, some being correct, others purple, deep red, and pale red, but all good in quality; average height 20 inches. Bright blue is with me a pleasing and showy colour, which comes very true and even in height, which is about 16 inches. Lastly, I have a deep purple, a fine dark-coloured kind, which sports only to dark red, and which is most effective either to stand or for cutting; height even, and about 16 inches. These colours constitute all that I grow at present, but some few have sported enough to constitute distinct colours to save for another year. Asters are everybody's border flowers, being so easy to cultivate, and when in bloom they furnish valuable material for nosegays. The flowers are solid and lasting, and, as the colours are striking and varied, bunches of cut blooms of them are always attractive and pleasing.

A. D.

The Rose Harvest.—I regret that the word "yellows" happened to be inserted in the wrong place (see p. 124), thus leading the uninitiated to infer that the "Baroness Rothschild, &c.," might be that of colour. I still contend, however, that the Baroness is so short on her short footstalk as to often look as if she were sitting among her fine green leaves, and that even she would be more beautiful and far more useful for cutting did she stand up higher. While upon Roses, permit me to ask your correspondents, Mr. Michael Barry and others, how they account for the paucity of our second harvest of Roses this season? The plants have seldom been in better condition, or the flowers fewer and far between. Last year the autumnal harvest was almost half as abundant as the midsummer one, and the flowers were good. This season the numbers are few, and the quality exceedingly moderate. This state of things seems general, not local. Within a few weeks I have seen the Roses at Manchester, Ipswich, and other shows, and the quality and quantity were less

and worse than I remember to have seen them for years. The weather can hardly be the chief cause of this comparative failure. For, coincident with this scarcity of blooms, we have a free growth and a healthy state of the plants. Some might say that the free growth had run away with the flowers. But, that theory will hardly apply to Roses, that mostly show the finer bloom as termini to the strongest shoots.—D. T. F.

Lilies for Small Gardens.—I have found much pleasure in a little bit of mother earth, hardly as large as a corporation table cloth. In this small space, in which I can grow no Roses (for I am almost surrounded by tall buildings), I have at this time a loggery or root-work, in which a fair collection of hardy English Ferns is doing well; an oval peat-bed, in which twelve *Rhododendrons* have flourished for these last ten years, with *Retinosporas*, *Azalea amena*, hardy *Heaths*, *Gladioli*, &c.; and attached to this, like the handle to an eye-glass, is a narrow bed of ordinary garden soil, for a few herbaceous perennials and ordinary bedders. Under the wall, my daughter has a narrow bed of *Violets* and *Primroses*. In the peat I have *Lilium speciosum* now blooming finely, and four roots of *L. auratum*, all of which have been there for the last four years. And here comes my wonder: three of these roots (*Lilium auratum*) bloomed in June and early in July; their height was about 4 feet, one, especially fine, having seventeen blooms on it of large size; the fourth is now nearly 9 feet in height, and has twenty-six blooms on it, some fully expanded, and some not yet open. They were all bought at the same time, and are all presumably of the same age. Whence the difference in height and time of blooming? Everyone tells me that my Lilies have been exceptionally fine, and, therefore, I have thought it well to furnish you with some account of them.—E. T., *Staines*.

Primulas in France.—*Primula japonica*, and all the other out of door sorts here, dry up and lose their leaves after blossoming, in a longer or shorter space of time, according to the species. After hardening their hearts (or crowns) during their season of rest, they burst forth anew and send out green and luxuriant leaves. *Primula grandiflora* and *elatior* spring up again with the September rains; *P. cortusoides*, the heart of which is below ground, remains dormant from July or August until spring. *Primula japonica* seems to vary; some seedling plants obtained this spring, after duly blossoming in June, dried up within a fortnight. I attributed the withering to the great heat, and was consequently, unfortunately, tempted to water them, though not profusely, and they all rotted and were lost. Now, some plants, propagated by means of offsets last summer from the original kind, obtained from London that spring, after blossoming this June, are now still in full leaf, the mother plants having last year retained their leaves quite late into the winter. After losing my plants this summer, I experimented on a border of *Primula grandiflora*, which was as crisp and dry as if quite dead; all those I watered rotted, and those I let alone are now bursting into leaf. From this I would infer that, when divested of their leaves, be it in summer or winter, *Primulas* require rest and must not be meddled with. As yet, I do not know whether seedlings of *P. japonica* lose their leaves during the winter or not; mine, sown last year as soon as the seed was ripe in an open border, are as luxuriant as *Cos Lettuces*; they show no signs of blossoming, and I believe that these plants never do blossom before they are a year old from the time they appear above ground, or two years from sowing time. I allude to out of door culture.—FREDERICK PALMER, *Versailles*.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Stellaria graminifolia aurea.—In what way can I best increase my stock of this new edging plant?—W. C., *South Hackney*. [Cuttings of it strike freely, and it may be also increased by division.]

Hardy Heaths.—These are now in great beauty in the Coombe Wood Nurseries. They consist chiefly of *Erica tetralix* alba, rubra, Mackayana, and intermedia; *E. cinerea* coccinea and alba; and *E. vulgaris* aurea, lanceolata alba tenella, elata, and an extremely handsome and free-blooming double-flowered variety of *vulgaris*.

Amarantus salicifolius.—Though this has done well this season in one or two places, as, for instance, at Messrs. Veitch's, yet it has been a partial failure compared with last year, a circumstance doubtless attributable to the absence which we have had of bright weather. Last year it grew luxuriantly, and by the middle of August was as brilliant as an *Alternanthera*; but this year it has, as a rule, neither grown well nor changed colour as it ought to have done.—F.

Large Harebells.—*Campanula Van Houttei* I find to be very suitable for the choice herbaceous border. It is easy to increase by division in March, and loves a good sound sandy loam to grow in. A good plant of it should, in the second summer of its life, be the size of a beehive, and completely smothered with bells of a large size. Other interesting *Campanulas* are *C. barbata* and *C. nobilis*, and its white variety. These are no mean additions to this interesting family; the ordinary treatment of *Campanulas* also suits these varieties. *C. urticifolia* alba and its double white and purple varieties are doubly valuable where cut flowers are in request, as they frequently throw up a second crop of flowers quite late in the autumn.—W. R., *Sydenham*.

CHINESE GARDENS.

SIR WILLIAM CHAMBERS, who visited China about the middle of the last century, and, on his return, published, in 1757, a work on "Oriental Gardening," states that, in the laying out of the Chinese gardens, three principal effects are aimed at by a succession of views or scenes, which are respectively characterised as the pleasing, the terrible, and the surprising. The visitor, on entering a garden, is generally introduced to something of the last-named sort, which has been planned with great art to excite astonishment by its mystery. Sometimes a stream is conducted through a subterranean channel, so constructed that the waters in passing produce a vague tumultuous reverberating sound, which it puzzles the listener to account for. Sometimes artificial rocks or buildings are curiously made with skilfully-designed crevices, cavities, and interstices, from which the wind, as it plays upon them gently or in stormy blasts, evokes a marvellous variety of strange sounds and weird unearthly music. Sometimes "the path lies through dark passages cut in the rocks, on the sides of which are recesses filled with colossal figures of dragons, infernal furies, and other horrid forms, which hold in their monstrous talons mysterious cabalistical sentences inscribed on tables of brass, or preparations that yield a constant flame, serving at once to guide and astonish the passenger. From time to time he is surprised with repeated shocks of electrical impulse, with showers of artificial rain, or sudden violent gusts of wind, and instantaneous explosions of fire. The earth trembles under him by the power of confined air; and his ears are successively struck with many different sounds produced by the same means, some resembling the cries of men in torment; some the roaring of bulls and howl of ferocious animals, with the yell of hounds and the voices of hunters; others are like the mixed croaking of ravenous birds; and others imitate thunder, the raging of the sea, the explosion of cannon, the sound of trumpets, and all the noise of war. Sometimes the traveller, after having wandered in the dusk of the forest, finds himself on the edge of precipices, in the glare of daylight, with cataracts falling from the mountains around, and torrents raging in the depths beneath him; or at the foot of impending rocks, in gloomy valleys overhung with woods; or on the banks of dull-moving rivers, whose shores are covered with sepulchral monuments, under the shade of Willow, Laurel, and other plants sacred to Manchew, the Genius of Sorrow." The writer goes on to describe the scenes of terror as "composed of gloomy woods, deep valleys inaccessible to the sun, impending barren rocks, dark caverns, and impetuous cataracts rushing down the mountain from all parts. The trees are ill-formed, forced out of their natural directions, and seemingly torn to pieces by the violence of tempests. Some are thrown down, and intercept the course of the torrents; others look as if blasted and shattered by the power of lightning. The buildings are in ruins, or half-consumed by fire, or swept away by the fury of the waters, nothing remaining entire but a few miserable huts dispersed in the mountains, which serve at once to indicate the existence and wretchedness of the inhabitants. Bats, owls, vultures, and every bird of prey, flutter in the groves; wolves, tigers, and jackals howl in the forest; half-famished animals wander upon the plains; gibbets, crosses, wheels, and the whole apparatus of torture are seen from the roads; and in the most dismal recesses of the woods, where the ways are rugged and overgrown with poisonous weeds, and where every object bears the marks of depopulation, are temples dedicated to the King of Vengeance; deep caverns in the rocks, and descents to gloomy subterraneous habitations, overgrown with brushwood and brambles, near which are inscribed, on pillars of stone, pathetic descriptions of tragical events, and many horrid acts of cruelty, perpetrated there by outlaws and robbers of former times; and, to add both to the horror and sublimity of these scenes, they sometimes conceal in cavities, on the summits of the highest mountains, foundries, lime-kilns, and glass-works, which send forth large volumes of flame, and continued clouds of thick smoke, that give to these mountains the appearance of volcanoes." We shall now pass on to the third and last kind of scenes—the "pleasing." "These are composed of the gayest and most perfect productions of the vegetable world, intermixed with rivers, lakes,



SCENE IN A CHINESE GARDEN.

cascades, fountains, and water-works of all sorts; being combined and disposed in all the picturesque forms that art or nature can suggest. Buildings, sculptures, and paintings are added, to give splendour, and variety to these compositions; and the rarest productions of the animal creation are collected to enliven them; nothing is forgotten that can either exhilarate the mind, gratify the senses, or give a spur to the imagination. In their large gardens they contrive different scenes for the different times of the day; disposing at the points of view buildings, which, from their use, point out the proper hour for enjoying the view in its perfections; and in their small ones, where one arrangement produces many representations, they make use of the same artifice. They have, besides, scenes for every season of the year; some for winter, generally exposed to the southern sun, and composed of Pines, Firs, Cedars, evergreen Oaks, Phillyreas, Hollies, Yews, Junipers, and many other evergreens, being enriched with Laurels of various sorts, Laurustinus, Arbutus, and such other plants and vegetables as grow or flourish in cold weather; and, to give variety and gaiety to these gloomy productions, they plant amongst them, in regular forms, divided by walks, all the rare shrubs, flowers, and trees of the torrid zone, which they cover during the winter with frames of glass, disposed in the forms of temples or other elegant buildings." The preceding sketches, from the pen of one who was an eye-witness of the scenes which he has described, give a better idea of the old Chinese gardens than any other work which has come under our notice. Sir W. Chambers was Comptroller-General of Public Works to his Majesty George III., and his "Dissertation on Oriental Gardening" is a very curious and

instructive book, which we recommend to those of our readers who may be fortunate enough to have an opportunity of perusing it.

Our illustration gives a very lively notion of the grotesque character of a Chinese garden scene of the "surprising" sort.

W. M.

THE USE OF THE MICROSCOPE TO THE CULTIVATOR.*

UPWARDS of five-and-thirty years' experience in the almost daily use of the microscope for investigating subjects of natural history leads me to speak with some degree of confidence as to the benefit that this instrument may confer upon the farmer [or gardener], by enabling him first to enter into the minutiae of the wondrous contrivances ordained by the Creator to maintain life, health, and succession in organised beings, and next to turn that knowledge to account, by seconding the more recondite operations of nature in those processes wherein his interests are most concerned. Through neglect of such a resource, bad or defective seed may cause the loss of a season's growth; crops may be wasted by the ravages of disease, which might have been stayed had it been sooner detected; while, by its adoption, adulteration in manures and various other substances may be brought to light, so that the farmer [or gardener] may be no longer at the mercy of the manufacturer or the dealer. He may also gain much insight into the mode and principles of vegetable growth, of inflorescence and fructification; and, by watching the influence of manures and other substances upon plants, he may learn the right time and manner of applying them, as well as the appearances of disease in its incipient stage and subsequent development, together with the action of all such preparations as either check or eradicate it.

One of the first subjects for which the farmer [or gardener] would probably seek the aid of the magnifying-glass would probably be the seed required for sowing. Every species of seed, and almost every variety of each species, will be found to possess some difference in appearance, either of colour, size, or external marking, that will at once give it a distinctive character. In numerous instances the external tracery upon the testa, or skin of the seed, furnishes not only a beautiful microscopic object, but a means of identification. Henbane, Tobacco, Poppies, Anise, and Caraway will serve as good illustrations of this fact; while each of the different species of Silene, or Catch-fly, will exhibit not only a strong family likeness, but likewise sufficiently distinctive traits to at once determine it specifically. It is almost impossible to obtain a correct idea of these characteristics in any other way than by actual observation; hence all the seeds used by the farmer, as well as those of the common weeds, should be rendered familiar to him by examination and study. Defects and impurities in samples of seed fall under two heads:—1st. Genuine seed, but barren or unripened; or, again, extraneous substances that will not grow, added to increase bulk. 2nd. Other kinds of seed capable of growth, the plants from which would be undesirable or injurious to the crops or land. The strongest plants being derived from fully-developed and well-ripened seeds, it will be the first consideration that the bulk of the sample shall consist of such. The character of these will be at once caught by the eye, and singled out as a prominent feature. A small quantity being taken into the palm of the hand, and a magnifying-glass, proportionate to the size of the seed, being used, a tolerably fair estimate may be made of the entire sample, and any extraneous substances that are not seed at once detected. For the larger seeds a common hand-magnifier will be sufficient; but, for the more minute, a much greater magnifying power will be required—at least until the observer shall have become perfectly familiar with the objects. It is a well-known fact that the faculty of recognising minute objects turns in a great degree upon familiarity with them; so that, upon intimate acquaintance, even very minute objects are readily recognised at a mere glance with a common lens.

"Doctored" seed ranks as one of the impurities comprised within the first division. When scalded seed has been mixed with choice varieties of Turnip seed, a practised eye will be able to detect them on carefully examining the hilum or germ of the seed, which is killed by the treatment. In the case of over-year Turnip seed that has been "renovated" in the oven, a similar examination will be likely to expose the deception. If Trefoil seeds have been "oiled," or shaken in a greasy bag, dust will be found sticking to the surface (especially if a little dust be shaken over them), which is not the case when they possess only their own natural gloss. The bulk of the seed is made up of farina or starch, and gluten. The latter,

when soaked in cold water, swells so that the grain may easily be crushed, or cut into thin slices, so as to show its internal structure. The quantity of starch-cells and the quality may thus be readily observed, and the quality of the grain or seed judged of by its richness in starch grains. The embryo, which lies at the depression called the scar, the spot at which growth commences, should be carefully examined, as seed that has begun to sprout from damp, and has then been checked, is wholly useless for sowing. The hilum or scar is the spot at which it is attached to the seed-pod or receptacle, and where the nourishment enters it from the coverings or seed vessel. When the seed is fully ripened, it separates of itself, and a cicatrix is formed which offers a distinctive indication that the seed has been matured. It is also at this spot that the moisture enters when the seed swells preparatory to growth, and also where the first sprouts of the future plant protrude. The state of this cicatrix, whether it be minute and perfect, or has been enlarged and shrivelled, are the points to be examined, and a comparison of good dry seed with some that has been sprouted and then dried, will show most clearly in what this difference of appearance consists.

MANURES.

The microscope will scarcely enable any inexperienced observer to learn much of the composition or quality of manure, although with practice much may undoubtedly be done. The inorganic bodies, such as sand and ashes, may readily be seen. Any organic substance, as sawdust, or other vegetable offal, may also be detected; and if a portion be washed in a very small quantity of boiling water, and a drop or two of this solution then suffered to dry on a glass slide, the peculiar salt or salts may be learned by their form, as every particular salt, or combination of salts, has its specific configuration and arrangement, which by the aid of the polariscope will at once become apparent. A knowledge of the form and characters of these salts is, of course, implied in such an investigation. Blood, fish-offal, and other similar substances may likewise be made out by careful manipulation. The genuineness of guano may also be learned through the presence of certain flinty remains or organic bodies, which are peculiar to the different deposits. Straw of Wheat, Oats, Grass, and many other vegetables, contains certain arrangements of flint in their substance that are left entire after all vegetable matter has become decomposed and washed away. These flinty and imperishable remains of vegetable organisms that have existed in the sea, and have either served directly as food for the penguins, or previously filled the stomachs of fishes and molluscs on which they have preyed, being deposited with the excrement which forms the guano beds, are the characteristic features of the best guanos. "When examined microscopically, a great abundance of beautiful silicious skeletons of diatomaceæ are found amongst it; and, curiously enough, the best samples of guano contain the greatest number of these remains, which," says the late Professor Quekett, "were first detected by my late brother in 1845." It is not improbable that the superiority of farmyard manure may depend very greatly upon the silica that the hay, corn, and straw contain, which is but sparingly appropriated by the animal. It may also arise from a deficiency of silica that the straw of corn is often weak, and breaks down under the weight of the ear. The exterior surface of straw, canes, &c., derive their fine polish, as well as their strength, from a layer of flint, as may be proved by boiling them in nitric acid. For the process of obtaining these remains from guano, and the flint from the stalks and leaves of plants, &c., the reader is referred to the valuable little work of Mr. Davies on the "preparing and mounting objects for the microscope," which is a complete manual on the subject at a small cost. For an examination of these silicious remains, the quarter-inch or one-fifth of an inch object-glass will be required, and a very accurate adjustment of the light must be obtained to bring out their very beautiful patterns in a satisfactory way. Of sand, loam, turf-ashes, and other such like additions, there will be little difficulty in detecting the presence, by a little practice.

DISEASE, AS AFFECTING THE ROOTS, STEMS, OR LEAVES OF PLANTS.

It may be considered a rare circumstance to find any one of these parts affected in any way by disease not arising from local injury, without at the same time the whole plant being out of health. We are apt to consider the pulling off a diseased leaf, or the cutting out a withered stem a sufficient remedial treatment, but, were the rootlets to be examined microscopically, it would soon be seen that something here too was wrong. It is an important question, open for investigation, whether all diseased formations in plants do not commence with an abnormal action at the tips of the rootlets, due to some change within the soil itself, such as undue dryness, sudden accession of a superabundance of moisture, the application of stimulating manure, either too strong, or applied when the plant is not in a condition to receive it. The moral of this is that the moment

* Abridged from a Prize Essay by W. K. Bridgman, L.D.S., R.C.S., in the "Journal of the Royal Agricultural Society."

anything may be seen to be going wrong, let the rootlets be at once carefully examined, and a note made of the condition of the soil at the time, as to openness, compactness, or dryness, as also of the treatment which the land may have received just previous to the discovery. It is, then, to the terminal points of the roots and rootlets that the inquirer's attention must be directed, and for this purpose the microscope is invaluable, as affording at a cheap rate that information which, obtained in the field on a large scale, becomes a costly experiment. The discovery of a patch of fungus upon the leaf or stem of a plant must not be taken for a cause of injury to the plant; it generally only indicates a want of vital action, and is the consequence of decaying organic matter. Fungi are rarely, if ever, found on healthy surfaces, but it is a law of nature that nothing stands still; if a plant be growing freely and healthily, it holds its own, and no sporadic fungi find a location, but the moment vital action flags or ceases, either from decreased vital energy, or from local injury, a lower order of vegetation instantly commences to obtain a sway. Mildew generally shows itself after a season of active growth, followed by an inequality in the supply of moisture from the soil and from the atmosphere. In other words, when, from drought, but little moisture finds its way into the system through the medium of the roots, such amount being insufficient to maintain a full and active circulation within the plant, and when the vital action thus becomes sluggish, the dews and damp of the night air overbalance it, and the germination and growth of fungi then commence. Fungi are known to be rapidly developed during and immediately after a thunderstorm, owing, it is supposed, to the nitrogenous compounds formed in the air, as a result of these electrical discharges. Hence, upon this hypothesis, the application of a stimulus to the roots should take place whenever any excessive stimulus is being derived from the atmosphere. Growth accelerated by means of artificial stimulants should be gradually attained, and as gradually reduced, care being taken to maintain a healthy action during the season of comparative rest, and to maintain an even balance of root action and atmospheric stimulus. The cell-structure of vegetable growth should be carefully studied, as the "cell" is the fundamental unit, by a repetition of which even the largest forms are constructed, and hence the life of the cell is the life of the plant, and death of a part may be followed by the death of the whole, unless a sufficient amount of reaction can be started. The "mycelium" of a fungus may sometimes be traced running through every part of a plant, and under these circumstances the death of the plant invariably follows. It may sometimes be traced only in the bark, or the epidermis, and then be of less consequence. In these investigations the higher powers of the microscope, as well as some acquaintance with the character and habits of the parasitic fungi are indispensable. But the roughness or scabbiness of roots and stems is often caused by other than fungous growths; it sometimes arises from injuries inflicted by the puncture or presence of insects—the larvæ of flies and beetles; at other times it may be produced by some injurious and irritating cause connected with the soil. A small transverse slice cut very thin by means of a sharp razor, and examined in water between two pieces of glass, will show the disposition of the cells both healthy and injured, and how far the latter extend, or are connected with the general structure. Transverse sections of the leaves taken through a diseased spot, and examined edgewise, show also to what extent the cells of a leaf may be affected by disease. The leaf itself is an important study, and requires some little amount of patient investigation to be thoroughly understood, but without this knowledge it is utterly impossible for any one to appreciate the exquisitely beautiful and delicate offices it has to perform, and the means by which its functions are carried on.

THE MAGNIFYING GLASS OR MICROSCOPE.

The construction of the magnifying glass, or microscope, varies according to the use for which it is intended; but the essential part consists of a highly polished piece of very clear glass, termed "a lens," which has one or more curved surfaces; an ordinary spectacle glass may be taken as the simplest form of a common magnifier of very low power: a sphere of glass, or of any other transparent substance, being the highest magnifier that can be obtained by one single piece. Thus, the more convex it is, the shorter is its focus; or in other words, the closer must the object and the eye be placed, to obtain a distinct vision, and consequently the more the object is magnified. The perfection that has been of late years attained in the construction of the microscope has been effected by using a number of different pieces of glass of different qualities combined together, so as to do away with imperfections natural to a lens formed of one single piece of glass only.

Lenses are mounted as common hand magnifiers, in tortoise-shell frames, folding up for the pocket. These contain from one to three glasses of different powers, so arranged as to be used singly or com-

bined; and a set, consisting of one-and-a-half inch, one-inch, and half-inch focus, will be found very generally useful. In addition to its use as a hand magnifier, Messrs. Smith, Beck, and Beck provide a stand, by which it can be made into a simple, but very useful, single microscope.

The disadvantage of small glasses of short focus is that they have to be held close to the eye, and the object close to the glass, which causes a degree of strain to the eyes that is both disagreeable and dangerous to the eyesight. These, however, are now almost wholly superseded by the compound microscope, wherein this defect is entirely overcome. A much greater additional advantage is also gained by substituting the latter for the single magnifier. When the utility of the magnifying-glass has been once found out, it almost invariably leads to a craving for greater power, so as to obtain a still further enlargement and better view of the object under examination. The principle of the single glass does not admit of any very great increase of this magnifying power, while with the compound arrangement the limit of the enlargement is, as yet, scarcely known, and, as now constructed, modern achromatic instruments are so contrived as to provide the highest as well as extremely low powers.

HINTS TO STUDENTS.

When an instrument has been selected, the next step will be to learn how to use it. There is one thing which must be constantly borne in mind from the very first, which is never to touch the glasses with the fingers, nor to wipe them with anything hard or rough: they should be brushed with a dry camel-hair pencil when dusty, but when they require to be wiped, this should be done with a piece of clean and very soft washleather, kept on purpose, and carefully wrapped up from dust when not in use. The use of the various pieces of apparatus will be best learned by obtaining a half-hour's instruction from an old hand. The method of observing must be gained by practice after the student has been put into the right way. It is a well known fact that persons not accustomed to observe minutely see nothing distinctly on first looking into a microscope—that is, although they may see the whole contour of the object presented, they take only a general view of it, and are not impressed with any special definite fact, such as could be referred to from memory afterwards, as a distinctive characteristic. There is the greatest difference possible between seeing and observing. Seeing is the rule, and observing the exception. Place a piece of lichen-covered stone or wood in the hands of a dozen different persons, and it is more than probable that not one of them, ten minutes afterwards, would be able to say whether it was red, blue, yellow, or green. Now, it is this habit of observing minutely and attentively, whether it be with the common eye-glass or with the highest powers of the microscope, that is the first step to be attained. Some particular feature should be looked for, such as external shape, roughness or smoothness of surface, colour or peculiarity in form of markings, &c., and afterwards the same features should be looked for in other kindred bodies, and the differences noted and written down if possible. The best practice is to commence upon any common objects that may be met with, such as seeds, sand, table-salt, &c., examining them separately at first, and then mixing them so as to obtain a view of several objects together. Portions of the flowers and leaves of plants afford an almost unceasing fund of instruction, whether in their healthy or diseased state. It is always desirable to obtain first with a low magnifier, a good general idea of the structure or composition of any object before submitting it to higher powers, and to increase the enlargement by degrees—using first an inch-and-a-half object-glass, then a two-thirds or half-inch, a quarter-inch, &c., as required. The diseases of plants are so intimately associated with the laws of vegetable life that a superficial acquaintance with the ordinary external appearance of disease in either roots, stems, or leaves, cannot be of the slightest avail unless something be known of the principles of vegetable physiology—i.e., of the structure and function of the several parts of the plant in their "normal," or natural and healthy state. To acquire this knowledge, diligent use of the compound microscope is indispensable, accompanied by some work on histology or vegetable physiology as a guide to the mode of investigation. Diseases are also supposed to be produced by fungi, such as mildew, rust, &c., but these growths are rather indicative of disease elsewhere. When the normal condition of the cell structure, of the root fibres, leaf-cells, and other parts of the plant are known, the mycelium of these fungi may be recognised and sometimes traced all through the structure. To comprehend the nature and arrangement of these fungous pests of vegetable life every part of the plant should be carefully examined for their presence. The structure of the leaves also bears a marked significance as to the mode of treatment plants ought to receive; the hairs and glands upon their surface, the stomata on one or both sides, are all connected with the laboratory within the substance, and have their respective functions to perform, any cessation of which becomes the precursor of disease. Portions

of the upper or under skin of the leaf may be stripped off with a sharp knife and placed wet between glasses so as to be ready for examination. The internal structure of the leaf is best seen by taking a very thin section by means of a razor across the thickness of the leaf, and thus getting an edgewise view of it and the hairs, &c., which are connected with it. Sections made with a sharp razor may be taken from all parts of the plant so as to afford a considerable amount of knowledge of its peculiar structure. Dry and hard seeds, such as Peas and Beans, &c., after being thoroughly softened in water, may likewise have thin slices shaved off in the same manner. All small seeds may be preserved in a very simple manner when required only for reference. Take a strip of any common card, or stiff paper, cut to 1 inch wide and 3 inches long, which is the standard size of microscopic object-slides. In the centre of this put a little thick gum, or thin flour-paste, and drop on it a heap of the clean dry seeds, and after a few minutes shake off all that are loose; put aside till thoroughly dry, and, if preserved from dust and damp, they may be kept for years. A collection should be made of the seeds of all common weeds, but more especially of those that are particularly obnoxious or injurious to crops or pasture. All materials such as wool, hair, vegetable fibres, starch, pollen, very minute seeds, or dust of any kind, if required dry, may be preserved between two pieces of glass fastened together by paper pasted upon them; but these are more commonly first soaked in turpentine and then covered with Canada balsam.

THE KITCHEN GARDEN.

THE TREE ONION.

I HAVE grown the tree Onion upwards of twenty years, and, as my practice has always been successful, and different in some respects to other people's, I think a description may prove interesting to those amateurs who are fond of cultivating this curious, useful, and uncommon Onion. In order to attain perfect success, the following three methods of culture must be adopted in order to get the three sizes of bulbs wanted, viz., one size for kitchen use, another for pickling, and the third size for seed, in order to obtain a larger size still for kitchen use.

Firstly, all the bulbs to be planted are best put into the ground triangularly, about 8 inches apart, using Onions about the size of Nutmegs; they may be planted singly, but in that case require an enormous quantity of sticks for support; when they are planted in triangles, one stick supports the growth of three Onions. When the bulbs have grown about a foot high, a stick from 3 to 3½ feet long must be thrust into the centre of each triangle, and the growing shoots tied to it for support. I usually plant the tree Onions about the middle of March, just covered by the soil; they soon begin to grow. In the month of June, a bunch of Onions, varying in number from four to eight, will make its appearance at the top of one or two stiff stems. Two stems are generally sent up from one onion. Soon afterwards another shoot is seen growing out of the bunch of Onions forming the first tier, which generally attain the size of large Nutmegs, and again another bunch of Onions is produced, smaller than those on the first tier. In due time another stem is produced, containing another bunch of Onions of very small size. This third bunch it is of great consequence to protect, by securing it carefully to the stake. Most cultivators never take any care of the little Onions produced at the top of the tree; they are so very small, being only about the size of the nail of the little finger, and in many cases smaller still. By all means take care of these little worthless-looking Onions, for reasons which I will state hereafter. It will be seen that three tiers of bunches of Onions are produced on one stem, and that the Onion planted generally produces two stems, rendering them very prolific; but, in addition to this, two good-sized usable bulbs are formed in the ground. The second plan of culture only differs from the first in nipping out all shoots which grow above the first tier, the effect of which is to produce only one bunch of good-sized Onions on each of the two stems, besides the bulbs in the ground. Onions produced by the second plan are quite large enough for the kitchen, the picklers having been nipped off. The third plan consists in making a bed of Onions, such as those produced from the common Onion seed. A bed 4 feet wide must be prepared by digging in plenty of manure, or using guano in proportion of 1 lb. to every 3 feet in length. This must be spread about and dug in. About February, or early in March, plant out the little rubbishy Onions before mentioned, grown on the third tier, in rows 6 inches wide and 6 inches apart. Plant out every one of them; the smaller they are, the finer Onions are produced. Do not plant deeper than about half an inch. In due time these little Onions will surprise you, by growing into large ones,

and having the same appearance exactly as those produced from seed; but you have the pleasure of not losing them by the maggot, and you have no trouble of thinning out scallions. You want no sticks to them, as they do not send up a stem with bunches of Onions formed in tiers one above another. The most curious part in this third mode of culture is that the Onions appear to have lost the character of the tree Onion for a season; but if you plant one of the large Onions produced in this way, the true character of the tree Onion is produced again. The tree Onion will grow in almost any kind of soil, and is particularly useful to persons having a sandy or gravelly soil where it is difficult to raise Onions from seed. It is very useful for pickling, and is quite a curiosity in its way, and can be rendered very profitable. As I plant several hundreds of Briars in my back garden every year for the purpose of budding Roses, I generally plant about three tree Onions at the foot of each Briar. The Briars act as supports, and the Onions are not in the way at budding time. I make the Briars do double duty. I take up tree Onions early in October; those grown on the upper tiers are not ripe before that time. If the reader prefers growing upon the second plan, nipping the tops off when one tier is grown, the Onions upon that tier will be ripe early in September.—*Field.*

NOTES ON LATE PEAS.

ALTHOUGH I have no desire to say a word in disparagement of new Peas, still in every class we find certain standard varieties that have been favourites for years, and that will probably continue so. The three best late Marrow Peas with me this year, for flavour and free and continuous bearing, are British Queen, Ne Plus Ultra, and Veitch's Perfection. British Queen is an old variety, that will grow at least 6 feet high in most soils, and has that most useful habit of continuous bearing, which is so much more necessary in a late Pea than in many other kinds. Where sticks can be easily obtained, there is little use in growing very dwarf Peas. True, tall Peas take up more room if the rows are placed side by side, but I do not consider that is the best and most profitable way of treating them. If the rows are sown 10 feet or 12 feet apart, and crops of Turnips, Cabbage, Spinach, or other vegetables occupy the vacant spaces between them, tall Peas really take up no more room than dwarf ones, and their productiveness is certainly far greater. Of course much depends upon due care being used in gathering, and never leaving any Peas on the stems to get too old for use. This has a very exhausting tendency either with Peas or Beans, although perhaps it is not noticed so much with Peas as with Beans, as a succession is usually kept up by fortnightly sowings. Still, the period for late Marrow Peas may be prolonged by careful gathering; as, except in the south, the last sowing of Marrow Peas should be made not later than the end of June, and if carefully managed those will furnish a continuous supply well into the autumn. A sowing of early kinds might be made as late as the middle of July, and in favourable seasons would turn out satisfactorily. Another sowing of early kinds might be made in August to supply tender green tops, which are much sought after by some cooks for flavouring soups, &c., and again also in September. Mildew is the bane of late Peas in most soils. I don't know any better remedy for it than mulching and keeping them well supplied with water in dry weather, so as to avoid any severe check from extreme drought. E. HOBDAY.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Cloches.—Can you help me in the matter of cloches? I find that they are not to be bought. I want very much to try the French system of growing Lettuce, yet without the cloches cannot expect to succeed.—**ED. PERCEVAL WRIGHT, M.D.** [Cloches are supplied by Messrs. Breffit, 83, Upper Thames Street, London, E.C., and by Messrs. Powell & Sons, Whitefriars Glass Works. The prices are about a guinea a dozen, or 2s. each for a less number.]

Tomatoes in America.—To show how well these succeed with us in the neighbourhood of New York, I may mention that I have two rows of them in my garden 150 feet long each, trellised. From these I get Tomatoes by the bushel; enormous Trophies, each a pound or more in weight. We eat and give away all we can, but still many are wasted, as we cannot can them so cheaply as those who make that matter their especial business.—**G. TURNER.**

In Japan every house must be decked with flowers on New Year's day; and to supply the demand, the shops are full of dwarf Peach trees, bearing double blossoms, and growing in large china vases and pots. The Japanese gardeners have a peculiar talent for raising dwarf plants and trees; and so great is the national fancy for such miniature products of vegetation that the toy and fancy shops abound with very minute and delicate imitations of such plants and flowers cut out of coloured paper.

THE GARDEN IN THE HOUSE.

PLANTS FOR HANGING BASKETS.

NEAT galvanised wire baskets, when furnished with appropriate plants, are specially useful for either conservatory or greenhouse decoration. The size of the baskets must, to a certain extent, be regulated by the situation which they are to occupy, but the larger the better, provided the house is large enough to show them off to advantage. For large conservatories, they may be from 2 to 4 feet in diameter, and about the same in depth. These hold a large body of soil, and, if well drained, plants grow much better in them than in small baskets, which require constant attention in order to keep them in a regular state as to moisture. For windows, or small greenhouses, the baskets, of course, must be much smaller than those just stated; but, as it generally happens that they are much easier to get at in small than in large houses, they need not suffer from want of moisture. Many are disappointed with their baskets through having them planted inappropriately, but most plants will grow as freely in them as in pots, provided they receive the same attention. Our illustration conveys an idea of what these baskets are when tastefully planted; it was engraved from a sketch made some time ago in the Royal Horticultural Society's conservatory at South Kensington. It was one of several arranged under the direction of Mr. Barron, and which have been very attractive during the past summer. Instead of the stiff and formal appearance too often encouraged under the name of neatness, these baskets were veritable hanging gardens in miniature—models of graceful beauty rarely excelled. In the planting of them flowering plants are toned down and softened by an admixture of Ferns, Ivy, and other graceful foliage plants, while a few trailers, such as *Cobæa scandens*, Ivy, and the Virginian Creeper, may be twined around the sides, or allowed to droop in graceful festoons as shown in our illustration. In large baskets, a charming variety of form and colouring may be introduced by means of succulents, Stag's-horn Ferns, Aralias, Cannas, Dracenas, Palms, and plants of *Ficus elastica*, along with *Hydrangeas*, Ivy-leaved and scarlet zonal *Pelargoniums*, *Achimenes*, *Begonias*, and common *Fuchsias*, the last being among the most beautiful of all plants for basket decoration. Both *Coleus* and *Iresine* are admirably adapted for planting in hanging baskets, as when looked at between the eye and the light their colours are seen to excellent advantage, especially when associated with fresh green fronds of *Maiden-hair* and other Ferns. *Panicum sulcatum* is an effective basket plant, and many ornamental Grasses might be used with excellent effect. When these baskets are cleared out and re-arranged in the autumn, it is an excellent

plan to insert a few Roman and other Hyacinths, Tulip, Crocus, and Jonquil bulbs in them, all of which flower freely and light up the foliage plants and Ferns with charming glimpses of bright colouring early in the spring, when other flowers are scarce. *Epiphyllums* also make valuable basket plants for flowering during winter, and should be grown in quantity for that purpose. Some of the scarlet *Tropæolums* of the *Lobbii* section are likewise well suited for basket culture, and bloom very freely when suspended close to the glass in a sunny situation. Many of the *Clematises* are invaluable

for basket work in cool conservatories, and, under such conditions, produce their large star-like flowers in great abundance. These plants also grow in a very elegant manner, drooping, as they do, from the baskets in graceful festoons of flowers and fresh green foliage. B.



A hanging basket at South Kensington.

PREPARING SKELETON LEAVES.

By JAMES F. ROBINSON.

WE have recently heard much about finding suitable employment for ladies, and allowing them to enter the medical profession, &c. I leave these discussions to abler minds; and, in a more humble manner, I shall endeavour to point out a little congenial employment for the leisure hours of our fair readers; one, moreover, in which, whilst they are usefully occupied, they will derive both amusement and pleasure. Most amusing scientific work is simply adapted for the passing hour; but mine, if enthusiastically followed, will bring joy when glanced at in years to come, for "A thing of beauty is a joy for ever" in more senses than one. A very pleasant occupation for leisure moments is the art of preparing, or rather skeletonising leaves. The old method, as most of my readers are aware, was simply to immerse the leaves beneath water for several weeks until the epidermis and parenchyma had decayed; then, taking them out, to rub off the decayed fleshy or cellular matter in a bowl of clean water. To say the least of this method, it was very unsatisfactory, and often yielded results far from pleasing, without taking into consideration the great amount of patience needful to complete the process. Now, thanks to chemistry, we have another and a better plan, not occupying as many hours as the old decaying method took weeks to accomplish. An excellent

recommendation for processes of this kind is their simplicity, as anything complicated, or requiring expensive requisites in its performance, is sure to be scouted, or, at most, to gain but few adherents. Most of my lady friends to whom I have recommended the undermentioned process for skeletonising leaves, have fallen so much in love with it, as to follow it up constantly in the autumn, merely for amusement. The result has been the production of many an elegant drawing-room ornament, either placed in the vase or mounted for framing beneath glass, as a permanent record of their industry.

First dissolve four ounces of common washing-soda in a quart of boiling water, then add two ounces of slaked quicklime, and boil for about fifteen minutes. Allow this solution to cool; afterwards pour off all the clear liquor into a clean saucepan. When the solution is at the boiling point, place the leaves carefully in the pan, and boil the whole together for an hour. Boiling water ought to be added occasionally, but sufficient only to replace that lost by evaporation. The epidermis and parenchyma of some leaves will more readily separate than in others. A good test is to try the leaves after they have been gently simmering (boiling) for about an hour, and, if the cellular matter does not easily rub off betwixt the finger and thumb beneath cold water, boil them again for a short time. When the fleshy matter is found to be sufficiently softened, rub them separately, but very gently, beneath cold water until the perfect skeleton is exposed. The skeletons at first are of a dirty white colour: to make them pure white, and therefore more beautiful, all that is necessary is to bleach them in a weak solution of chloride of lime. I have found the best solution is a large teaspoonful of chloride of lime to a quart of water; if a few drops of vinegar are added to the bleaching solution, it is all the better, for then the free chlorine is liberated. Do not allow them to remain too long in the bleaching liquor, or they will become very brittle, and cannot afterwards be handled without injury. About fifteen minutes is sufficient to make them white and clean-looking. After the specimens are bleached, dry them in white blotting-paper beneath a gentle pressure. Of course in this, as in other things, a little practice is needful to secure perfection. Simple leaves are the best for young beginners to experiment upon: Vine, Poplar, Beech, and Ivy leaves make excellent skeletons. Care must be exercised in the selection of leaves, as well as the period of the year, and the state of the atmosphere, when the specimens are collected, otherwise failure will be the result. The best months to gather the specimens are July to September. Never collect specimens in damp weather, and none but perfectly-matured leaves ought to be gathered.

In my next paper I shall explain how to print leaves and fronds of Ferns by the Chromotype process; also, how to prepare autumnal leaves on glass for the amusement of winter evening parties.

EVERLASTINGS FOR WINTER DECORATION.

SOME of the Everlastings, or Immortelles, are strikingly beautiful when neatly arranged, and if, in some cases, they lack the fresh sweetness of newly-gathered blossoms, they have the advantage in being permanent, and are often serviceable as decorative objects when fresh flowers are both expensive and difficult to obtain. We here speak of Everlastings in the general sense, including those flowers which are dried artificially in their natural colours. For permanent winter bouquets and other floral decorations, they prove very useful, when tastefully arranged along with ornamental Grasses and dried Fern fronds, elegant sprays of Club Moss, or Selaginella. For variety, they may be grouped with skeletonized leaves and seed vessels, the ivory whiteness of which contrasts most effectively with the bright-coloured flowers and green Ferns already recommended. These flowers are largely used on the continent in the manufacture of wreaths and crosses for the decoration of tombs and shrines, while their importation to this country now forms a prominent part of the autumn business of our leading decorative florists. One advantage possessed by these flowers is, that, when carefully handled, they may be re-arranged and used in new and pleasing combinations time after time; and, as ornaments for the chimney-piece or side-board, they are peculiarly adapted, and, if arranged under glass shades, they will keep fresh and clean from dust for a considerable period. Most of the Everlasting flowers are produced by composite plants, and may be easily raised from seeds sown in May, in a warm sunny border, or they may be sown in pots in the greenhouse or frame a month or two earlier, so as to be in a forward state for planting out when the mild weather commences. Seeds of both Immortelles and ornamental Grasses may be bought from any London nurseryman for a mere trifle. If, however, one has no convenience for cultivating them, they may be purchased,

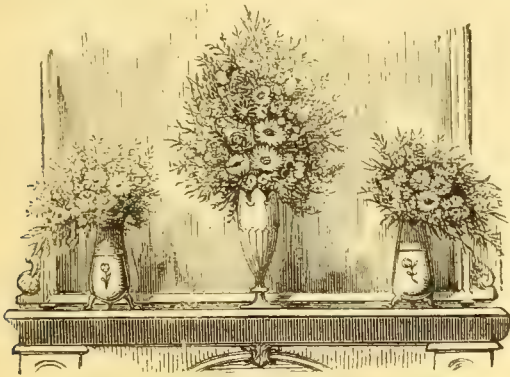
either loose or in bunches, for a few shillings any time during the autumn months. The kinds most useful for the purposes above alluded to are the rosy and white-flowered *Acrocliniums*, *Helichrysums*, as *H. bracteatum* and *H. monstrosum*, which have large flowers, produced in quantities in the open border, and very variable as to colour, running through all the shades of yellow, orange, red, purple, crimson, and white. Other smaller-flowered species, as *H. arenarium*, *H. elegans*, *H. capitatum*, *H. apiculatum*, and *H. strictum*, grow freely in a sunny position, on a warm sandy soil, producing their flowers in great abundance. *Helipterum Sandfordii* is another charming yellow-flowered half-hardy annual well worth growing for bouquets and winter flowers. The most beautiful of all Everlastings are those borne by the *Rhodanthes*. These charming little plants have pale glaucous foliage, and flower freely, when about a foot high, if treated as recommended above. They are also invaluable, as pot plants, for greenhouse or window decoration, while their delicate silvery or rose-tinted flowers may be grouped with the choicest exotics without offending, in any way, the most refined taste. These plants are cultivated largely by the London market growers for the supply of Covent Garden Market, four or five seedling plants being pricked out into a forty-eight pot and grown on in a cool frame until they flower. The kinds at present in cultivation are, *R. Manglesii*, *R. Manglesii major*, both bearing delicate rosy flowers; *R. atrosanguinea*, crimson-purple; *R. maculata*, rosy-purple, with a dark circle round the eye; and *R. maculata alba*, the most beautiful of the whole group, the flowers and buds being of the most delicate silvery whiteness imaginable. Some of the *Waitzias* are well adapted for window decoration, and occasionally the flowers, which are either yellow or reddish-purple, may be utilized for bouquets. *W. aurea*, *W. acuminata*, *W. corymbosa*, and *W. grandiflora*, are all effective and worth general cultivation. Several species of *Xeranthemum* are amongst the most beautiful of all the Immortelles, and ought to be much more popular than they are at present; *X. album*, *X. atropurpureum*, and *X. imperiale* being the best. In addition to the above, all of which may be grown in a sheltered herbaceous border, we have several greenhouse plants that produce flowers of the Everlasting type. One of the finest of half-hardy Everlastings, though mostly grown in pots in the greenhouse, is *Gomphrena globosa*, a charming plant, its varieties bearing rosy-purple, flesh-coloured, and pure white flowers. Again, *Phenocoma prolifera*, *Aphelexis purpurea*, and its varieties, all bear large rosy star-shaped flowers, well adapted for permanent decorative purposes. The plants above referred to are natural or true Everlastings, all the preparation they require being to cut them soon after the buds expand, and lay them on shelves in a dry dark room, or they may be tied up loosely in bunches and suspended from a line where they dry in a few days. The flowers should be cut before they become fully expanded, and a dry sunny morning should be selected for the purpose—flowers cut when damp being apt to spoil by rotting. Several of the *Statice*s and *Gypsophila elegans*, though not strictly speaking Everlastings, may be dried easily, and are then very elegant additions to the winter decorations. The most beautiful Immortelles are, however, stiff and formal when arranged alone, and of all other plants ornamental grasses are the most useful for adding variety and grace to groups of these flowers. Occasionally a few bright tinted autumnal leaves may be added, these being now prepared and varnished by many of the American as well as by English decorative florists. These, with the skeletonised foliage previously referred to will infuse an agreeable variety into a tasteful arrangement of these flowers, and form a natural ornament as permanent as those composed of artificial flowers, and a great deal more interesting. The best Grasses for bouquets and decorative vases are, *Agrostis argentea*, *A. elegans*, *A. nebulosa*, and *A. laxiflora*, all very graceful and effective. All the Quaking grasses (*Briza*) are good, as *B. compacta*, *B. major*, and *B. gracilis*, while *Brizopyrum siculum* is very useful for bouquet work, and especially for edgings. All the species of *Chloris*, such as *C. barbata*, *C. ciliata*, *C. cucullata*, *C. elegans*, and *C. radiata* are useful, producing fine and gracefully radiating spikes quite distinct from the general forms of Grasses. The same remark

applies to the different forms of Eleusine, all of which are very effective. The common Love Grass, *Eragrostis elegans* and *E. cylindriflora*, are both very finely divided, as are all the species in the genus. *Hordeum jubatum* and the common Hare's-tail Grass—*Lagurus ovatus*—are both useful for either bouquets or vases, while the Feather Grass—*Stipa pennata*—and several allied species are well known, and their silky plumes, which sway to and fro with the slightest breath of air, are much admired. Ornamental Grasses, though beautiful, are not much appreciated by the generality of cultivators, still many florists are now beginning to use them largely for decorative purposes; doubtless amateurs will follow suit. There is an immense variety of elegant species



Basket of Flowers and Grasses.

well suited for bouquets, and assortments of twenty or thirty varieties will be supplied by any London seedsman for a mere trifle. It is almost needless to mention that both Grasses and Everlastings may be mixed with ordinary flowers, either when fresh or in the dried state. Of late years it has become the custom to use both Immortelles and preserved autumnal foliage along with the evergreens for Christmas decorations. The Maple, Oak, and other leaves are very beautiful, varying from pale yellow, through all the shades of red and brown, to the deepest crimson tint imaginable, and being sold loose they can be arranged according to fancy. With the materials we have here indicated, some very elegant arrangements in the way of wreaths, crosses, bouquets, and vases may be made,



Chimney-piece Vases, with Flowers and Grasses.

according to the taste and ingenuity of the artist. Our illustration shows three ornamental vases neatly arranged with Grasses and Everlastings, as chimney-piece decorations, for which they are well adapted. Another elegant arrangement is to fill a shallow basket with flowers and Grasses, as shown above, thus forming a graceful ornament for either the drawing-room or parlour table. We are indebted to Mr. John Harrison, of Darlington, for the use of the accompanying engravings in illustration of this subject. F. W. B.

WINTER BOUQUETS.

ON the mantel-piece of the parlour, in our pleasant country home, stand two beautiful Bohemian glass vases. During the summer they are bright with flowers, but when winter comes they stand mournful and empty monuments of the beauty and bloom which the cold

chilly winds of December stole from us, while the "lesser lights" around do duty by holding tapers of many colours and fanciful shapes. What to fill these empty vases with, was the question. I remembered a method I had seen for crystallizing Grasses for bouquets, and resolved to try it. I went to work and gathered the Grasses, tying up two large bunches, mingling the long, graceful wild Rye with various feathery Grasses, giving dignity and substance by the addition of sturdy Timothy and Millet, bearded Wheat and Norway Oats, and crowned the whole with long, drooping heads of an enlarged form of our Millet. It made a beautiful finish for my bouquet, which I tied up loosely, and suspended over a small wooden tub. I then dissolved a pound of alum in a quart of rain water, and when scalding hot, poured it over the Grasses, taking care that the solution reached every part of them. I left them hanging all night, and found them in the morning with a crystal shining from every spray. So the question how to fill the vases was answered, and all this coming winter, in the lamp-light and glow from the fire, they will scintillate and sparkle as though the dews of Golconda had fallen upon them, thus proving "a joy for ever"—or until

The Roses bloom again,
And the springs do gush anew,

when I can treat persons to a new version of the old adage, and tell them "all are not diamonds that glitter." S. J. O.

To Restore Faded Flowers.—Most flowers commence to droop and wither after being kept in water for twenty-four hours; a few can be revived by substituting fresh water, and a pinch of saltpetre in it will tend to keep them bright and fresh. But badly withered flowers can be made fresh by placing them in a cup of boiling hot water, deep enough to cover at least one-third of the stems; by the time the water has cooled entirely, the flowers will have become bright and erect. Now cut off the ends of the stems about an inch, and place them in cold water, and you will be surprised at the reviving influence of this treatment. Thin-petaled, white and light-coloured flowers, however, will not become so fully restored as high coloured, thick-leaved blossoms.—DAISY EYEBRIGHT.

IN AN APPLE ORCHARD.

Oh, Apples on the Apple tree,
How fair you look! how thick you be!
Some red, some yellow, and some grey,
You ripen slowly day by day.
The sun has touched you, and the rain,
The calm, and then the hurricane,
The drought has dried you, and the dew
Has drenched; and still you grew and grew.

Oh, Apples on the orchard tree,
Speak to this heart, its teachers be!
Where'er I find a settled place,
There I should grow with patient face.
Let bud yield room to blossom's suit,
And that in turn to forming fruit.
Below the surface of the mind
A secret sweetening I would find;
And in the heart's deep core enwrought
The mystic seeds of strong love-thought.
And by my neighbours I would stand,
And touch them with a gentle hand.
And I would not have over-care
If I be high, or low, or where;
But I desire, as time shall pass,
A gatherer coming through the Grass,
With keen quick eye and ready touch
To pick all fruit, ere ripe too much;
With a broad basket on his arm
To save me from old Winter's harm;
Then, at the last, in garner stored,
An offering to the Orchard's Lord.

—Chambers's Journal.

An Egyptian Medical Papyrus.—The *Allgemeine Medizinische Central-Zeitung* states that Professor Ebers, of Leipsic, during a recent visit to Egypt, obtained possession of an ancient Papyrus, written in the oldest hieratic character, and believed to be above 3,400 years old. Notwithstanding its great age, not a single letter is wanting in the 110 leaves of which it consists. It is a complete treatise on ancient Egyptian medicine. Nine leaves are devoted to diseases of the eyes—a subject in which the Egyptians were in advance of all other nations of antiquity. The substance on which this treatise is written is prepared from the stem of that tall and graceful sedge, *Papyrus antiquorum*.

THE HOUSEHOLD.

THE HEALING PROPERTIES OF CABBAGE LEAVES

THE therapeutical value of Cabbage leaves, which has long been recognised in household medicine, is discussed at considerable length by Dr. Blanc in the *Revue de la Thérapeutique*, and the conclusions to which he comes, concisely stated, are as follows:—1. The Cabbage leaf excites and augments suppuration of the secretion of ulcers, ulcerations, vesicles, and pustules. It has the same action on the integuments affected by an erysipelatous or furunculous inflammation, but removes tissues in a morbid condition. 2. This augmentation of suppuration is constantly followed by an amelioration and often by a cure. It is the condition necessary to the result, and the property of the leaf which determines this result is an indirectly curative property. 3. This property does not consist in any principle which the leaf yields for absorption, but rather in an affinity which the leaf has for the vitiated secretions. 4. The leaf exercises this affinity on open ulcers, or on ulcers covered by a thick or thin scab or crust; it exercises it on the thickened epidermis or where it is converted into thickened rind-like membranes; in simple or confluent variola, throughout mortified tissues, through the integuments, whether inflamed or non-inflamed, but removes tumors capable of absorption. 5. When the tegumentary affection is widespread or general, the action of the leaves on the parts where they are applied benefits the whole disease. 6. The matter in the parts not covered by leaves is absorbed, and at once directed under the leaves, to be immediately excreted at that part. 7. Treatment, by the leaves, of a suppurative affection prevents re-absorption and consequent pyæmia. 8. The cure obtained by this means is more complete and certain than by any other, because it is brought about only when the cause and products of disease are eliminated from the system. 9. This mode of treatment is in perfect harmony of action with the *vis medicatrix nature*. This essays, in skin diseases, to eject from the system their cause and effects, whilst the leaves aid this action. 10. The cure of an ulcer by the leaves, however widespread and long-standing it may be, is without danger, and relapse is very rare. 11. The cicatrices obtained by the leaves are remarkable for their small degree of deformity. 12. Small-pox, measles, and scarlatina, treated by applications of the leaves, have few or no sequelæ; e.g., phthisis is not to be feared.

HOW TO PRESERVE FRUIT.

Green Gages.—Weigh three-quarters of a pound of sugar for each pound of fruit, after having split the Plums and taken out the stones. Take the kernels from them, pour boiling water over them, and rub off the skins. Then put the sugar over the fire with a cup of boiling water; melt it and skim it thoroughly. Put in the Plums and the kernels, and let them boil until quite clear; skim out into glass jars, and turn the syrup over them while it is boiling hot. By placing the glass jar upon a wet towel, and putting a large silver spoon into the jar, before adding the syrup, there is no danger of cracking the glass. Of course the spoon is taken out when you close the jar tightly.

To Preserve Damsons.—Put half a pound of powdered loaf-sugar to every pound of Damsons; mix well together, and put them into a stone pot; cover them up closely, place in a pot of boiling water, and boil for three-quarters of an hour. Let them stand until nearly cold; then strain off the juice, add a quarter of a pound to every pint of it, and boil and skim until perfectly clear. Pour it over the Damsons, put a paper wet with alcohol or whisky over them, and cover and tie down with strong brown paper. They will keep perfectly good for at least a year.

To Keep Damsons.—Put them into stone jars; set the jars up to their necks in a kettle of cold water, and boil them for half an hour. Then cork up tightly. When needed for use, add sugar to taste.

To Dry Plums.—Gather the Plums when not too ripe. Prick each one with a darning needle in several places. Take half a pound of sugar to each pound of fruit. Melt the sugar with a little water; skim it thoroughly; then add the Plums and boil for half an hour. Skim out the Plums, and boil the sugar for twenty minutes longer, or until it nearly candies, which you can tell by taking up a small quantity in a spoon and letting it drop down until it threads out in minute strings. Turn it over the Plums, and put them to dry in a cool oven, stirring them up every few minutes. When candied, put into paper boxes.

To Preserve Apricots.—Turn boiling water over them, and let them stay in it until you can peel off the skins, or rub them off with a towel. Take three-quarters of a pound of sugar to every pound of fruit. Melt the sugar, and clarify it with the whites of two

eggs thoroughly beaten; add them when the sugar is melted, and, when it boils up well, turn in a small teacup of cold water. When it boils again, remove the scum which rises to the top; pour off the clarified syrup into a preserving kettle, and put in the fruit; let it boil for ten minutes; skim out into jars; turn in the syrup and fasten closely.

To Preserve Pears.—Take Pears not quite ripe and peel off the skins. Prepare a syrup with three-quarters of a pound of sugar to each pound of fruit. Melt it and boil for half an hour, removing all the scum which rises. Put in the Pears, and let them boil for ten minutes, or just long enough to soften a little; then take out, and cover tightly with paper wet in whisky or alcohol, and cover with another paper placed over the mouth of the jar.

Apple Jelly.—Take the Apples, pare, core, and quarter them, and boil in water enough to cover them, until quite soft. Then turn into a flannel jelly-bag, and let the juice run out without squeezing at all. The jelly-bag is made like an enormous funnel, with a short nose and sewed up in one seam. Take a square of flannel and double over in two points, lapping it in the middle, and you will see how it is done. Tie this bag by fastening tapes to each side of it, to chairs, and let the juice run into a dish. To one pint of juice put one pound of white sugar, and boil for twenty minutes. Then turn into jelly cups. Add sugar to the jam, and boil for marmalade.

Preserved fruits often either ferment, mould, or candy, unless they are placed in air-tight cans, and these are not always within reach of the housewife. Now these three effects are produced by three separate causes—they ferment because they were not boiled enough; they mould from being kept in a damp place; they candy from being boiled too long. If papers dipped in whisky or alcohol are laid directly over preserves and jellies, it will often prevent them from spoiling. Preserves should be kept in a dark but dry place, and in arranging them on the shelves of a store-closet they should not come in contact with the plastering.—*Cultivator*.

A New Salad.—I think I discovered something new in the way of salads the other day, and if not new something very agreeable. Enjoying a *salade des légumes* the other morning, it occurred to me that cold baked Tomatoes and cold Vegetable Marrows would go very well together. I accordingly tried and mixed good cold baked Tomatoes, not too much done, with the skins off, and some good-sized Vegetable Marrows, adding some Tarragon vinegar. The result was a peculiar and most delicious salad. Garnished with some of the trifling vegetable accompaniments, which a good maker of salads knows how to use, it might be improved, but I could desire nothing more delicious in the way of a salad during the warm days of summer and early autumn.—V.

Blackberry Wine.—Measure your berries and bruise them; to every gallon adding one quart of boiling water. Let the mixture stand twenty-four hours, stirring occasionally; then strain off the liquor into a cask, to every gallon adding two pounds of sugar; cork tightly, and let it stand to the following October, and the wine is ready for use, without further straining or boiling. Another way:—Take 100 quarts of Blackberries, crush them and press out the juice. Then dissolve 110 pounds of white sugar in 20 gallons cold water. Measure the syrup; add the juice, and as much more water as will be required to make 40 gallons in all. If you want to make a smaller quantity, preserve the above proportions. After putting it in the cask (one that has recently had whisky is preferred), set it in a cellar or other cool place with the bung open to the air until Christmas. Then stop tightly or bottle it.

Blackberry Cordial.—To two quarts of juice add one pound of white sugar; half ounce Nutmeg; half ounce Cloves pulverized. Boil all together for a short time, and when cold add a pint of brandy.

NOTES AND QUESTIONS ON THE HOUSEHOLD.

How to Cook Mushrooms.—Get half grown Mushrooms, peel them and lay them side upwards on a plate; put to each a small piece of butter, but only one layer thick; pepper and salt to taste; add two-tablespoonfuls of ketchup, and one of water; press round the rim of the plate a strip of paste, get another plate of the same size, firmly pressed in the paste; put the whole in a brisk oven for 25 minutes; the top plate should be left on until served, when you will not only have a dish fit for an Emperor, but one that would delight an Emperor.—R. GILBERT, *Burleigh Gardens*.

Coddled Apples.—The name is homely, but the article good. After the smaller fruits are out of season, coddled Apples make one of the very best desserts that can be sent to the table. Gather small unripe Apples, do not peel them, but cut them into slices from the core; put them in a saucepan and pour on water enough to cover them; cover the saucepan and stir the Apples occasionally to prevent burning, and when thoroughly soft, mash them smooth through a sieve. Send to the table in a glass or china dessert-dish, with milk or cream, if you have it, and put the Nutmeg and grater on the table for those who like this spice.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Pines.—To plants swelling their fruits give a little manure-water occasionally, and maintain a temperature of from 85° to 90° during the daytime, and from 70° to 75° at night. Manure-water must be more sparingly used in dull than in bright weather, and a gentle syringing with clean tepid water now and then in fine weather is beneficial. Queen Pines ripening their fruits should be kept rather dry at the roots, and in a well-ventilated pit, in order to improve their flavour. Take off and pot all suckers from the plants as soon as they are large enough; plunge them in a brisk bottom heat, and sprinkle them gently overhead every fine afternoon, but do not water the soil until the roots begin to grow. Such plants as are required to start into fruit in December and January should now be kept as dry and cool as possible, so as to give them a good rest, and to cause them to start away vigorously into growth when required.

Vines.—The wood of Vines intended to be forced in November should now be thoroughly ripe, and the leaves off or falling; therefore prune and dress them as speedily as possible, in order that they may have a fair rest before forcing begins. The houses in which they are growing should be kept quite cool and well ventilated, both at top and bottom. Pot Vines for early forcing should also now be ripe, and should be placed out of doors, where the canes can be tied up loosely against a south wall or hedge; in case of heavy rains, turn the pots on their sides to prevent saturation of the soil, which sometimes induces premature growth. In late Vineries, where the Grapes are not yet quite ripe, ventilate freely during the daytime, and also a little during damp nights, when a little fire-heat should likewise be applied. It is of importance, however, to have all Grapes well ripened about the end of the present month. Vines from which the fruit has just been cut, and also such as were planted last spring, and which have not yet borne fruit, should receive great attention, as regards getting the wood ripe, by means of abundant ventilation and gentle fire-heat at the same time, if possible. In order to preserve the warmth of the soil in the outside borders, they ought to be covered with spare sashes, wooden shutters, tarpauling, or roofing tiles, to prevent the autumnal rains from reducing the temperature.

Melons.—The season for frame Melons is now all but over. In pits, however, the plants for late fruiting should be vigorous, and previously prevented from setting their fruits till now, when, with great care, a night temperature of 70°, judicious applications of tepid water, and slight syringings on fine days only, they will ripen a good late crop. Mulch the beds with leaf-mould or old Mushroom dung to prevent them from drying too quickly. Do not give much water to fruits that are fully swollen, or that are ripening, as such would be apt to cause the fruit to crack, and deteriorate its flavour.

Cucumbers.—Winter fruiting plants of these should now be establishing themselves in the beds, and must not be too much syringed. The soil for late Cucumbers should not be quite so rich as for summer fruiting ones. Maintain a night temperature of 70° to 75°, and pick off any leaves affected by thrips, and use sulphur to counteract mildew. All fruits for seed should have been secured earlier in the season than this, for by keeping them thus late the plants are considerably weakened. Avoid, too, overcropping, and give some weak manure-water to fruiting plants.

Strawberries.—If these were shifted into their fruiting pots last month, they will now have become good well-rooted plants. Give them some manure-water made from dung—not guano—and pick off any runners as they appear. Water them in the mornings in preference to the evenings.

Hardy Fruit Department.—Harvest all fruits when fit for that purpose, for any delay in this matter oftentimes induces decay, or badly-flavoured fruit. Indeed, much more depends on the time of gathering than on almost anything else as regards flavour and quality. Pick off all young laterals on wall-trees, and spread out the wood so as to allow it to become thoroughly ripened. It is of importance to unfasten the ligatures around buds as soon as the latter have "taken" well, so as to get the buds and wood well ripened. It is a good sign to see buds put in in August now quite browned like the sunny side of the young shoots, for then they generally stand the winter well. Cut off the heels on Stocks grafted last spring, and select the stoutest-wooded young plants for pot culture, and the medium-sized ones for permanent plants, as, owing to their being the best ripened, they generally are the most satisfactory. Dress up the stems of young standards, by pruning off all the sprayy shoots left, to prevent the stem becoming hide-bound. In order to prevent this in old plants, slit down the bark every second year with a knife.

MARKET GARDENS.

The present damp weather seems to suit vegetable crops, for all are growing freely, and none are showing unseasonable signs of decay. Scarlet Runners have made, as it were, a fresh start, and are now bearing very profusely; but the bulk of the French Beans are getting into the sere and yellow leaf. Indeed, the Scarlet Runners, or red and white flowered Dutch Beans, continue longer in bearing, and yield a considerably greater amount of produce, than the French Beans, which are undoubtedly the best for early work. Rosette Coleworts are now quite plentiful, as they are being cleared in large quantities from amongst the Celery rows. Celery is remarkably good this year, and has not entailed much trouble in watering. Potatoes and Onions have been good, and, as a rule are mostly harvested. Endive is now coming in well, and Radishes are crisp and good. Turnips have not germinated so effectually as they do some years; but, where they have missed, the space is made up with Lettuces. The earliest Mushroom beds are bearing a little, and the bulk of the Tomatoes have been gathered. Dig every available piece of ground, and plant spring Cabbages and Coleworts thereon. Weed Cauldowers, thin them a little, and dust some lime around the outskirts of the beds to prevent the inroad of snails and slugs. Weed the beds of young Onions, and see that those stored in shed do not heat or turn bad, and select for market all the stout-necked ones first, and such as are liable to rot. Lift Carrots, Beet, and Parsnips, as required for market, and take them as they come without selection, for the plan of taking one here and another there over the field is not only not economical, but loosens the soil about the others, and, by clearing all off, the ground can be got in readiness for another crop. Tie up Endive some days before it becomes fit for use, and make fresh plantations of the same in well-prepared warm ground. Hoe Spinach, and clear off old French Beans so as to give room for Savoys, Brussels Sprouts, and Broccoli. Earth up Celery, and, as the first plantation is removed for market, utilise the ground by stocking it at once with Cabbage or Endive. Make another plantation of Leeks, and pick off all remaining fruits from Tomatoes, and ripen them under sashes in frames. Finish the making of Mushroom ridges, and spawn those already put up as soon as the heat has sufficiently subsided. It is dangerous to insert the spawn if the heat be greater than 90°. Gather and store fruits. Those that will soon become ripe may be sent to market at once, but late-keeping and good fruits should be kept until they are nearly ripe.

COAL PLANTS.

At a meeting of the members of the British Association, held the other evening in St. George's Hall, Bradford, Professor W. C. Williamson, of Manchester, delivered a discourse on coal and coal plants. He commenced by calling attention to a lecture on coal delivered a few years ago at Bradford by Professor Huxley, and to the progress which had been made in our knowledge of coal and coal plants since that date. With that lecture within their reach, it was not necessary for him to enter in detail upon many such questions as the vegetable origin of coal and the drift theory of its accumulation. Most men were now agreed that it was once a vegetable soil which accumulated under the shade of primæval forests growing on areas of depression. In time the land sank beneath the sea, and the vegetable elements were buried under layers of sand and mud, accumulations of which again restored the area to the sea level, when spores of plants once more germinated in a blue mud, and the succession of phenomena which had previously occurred was again renewed. The frequent repetition of these changes finally resulted in the accumulation of the thousands of feet composing the vertical series of rocks which were termed the carboniferous strata. Professor Huxley directed attention to some minute coin-like bodies which are very abundant in some coals, and which had been previously noticed by Witham, Morris, Dawson, and Balfour. The larger of these bodies Huxley regarded as sporangia or spore-cases, and the smaller ones as spores, while he considered that their disintegration had led in most cases to the formation of the bulk of what we call coal. Professor Williamson showed in detail that these were not spore-cases, but two kinds of spores—microspores and macrospores—such as severally occur in the upper and lower portions of the fruits of many living Club Mosses. Their sizes and their structure demonstrated the truth of this conclusion, which was further sustained by the fact that sporangia were not deciduous, but spores were; and these objects having fallen in such vast myriads from gigantic Club Mosses can only have been deciduous organs. The lecturer then gave reasons for concluding that these spores had played a much more limited part in the origin of coal than Professor Huxley had assigned to them. He showed specimens of coal distinctly composed of masses of small fragments of mineralized vegetable tissue, but which, when their sections were examined

under the microscope, exhibited no trace whatever of organic structure, but were wholly undistinguishable from the ordinary black matter of coal. Specimens were also shown which were masses of spores in shale and ironstone, as well as a large series of sections of the Lancashire coals—some of the best of which had few spores in them, while some of the worst abounded with these objects. Thus, we have masses of spores without coal, and of coal almost without spores. Huxley concluded that coal was composed of mineral charcoal and coal proper—the latter term being equivalent to spores altered or unaltered. The lecturer, on the other hand, recognised three such elements:—Mineral charcoal—*i.e.*, fragments of fossil wood retaining its structure; coal proper—*i.e.*, mineral charcoal disorganised; and spores in various states. Turning to the plants, Professor Williamson called attention to the progress which the study of their organisation had made within the last few years. Beginning with Witham, of Lartington, and Brongniart, the work had been carried forward by Corda, Binney, Carruthers, Renault, and many others; working especially upon materials drawn from Autun, Arran, Burntisland, and Oldham. We can now distinguish three groups of fossil plants:—1. Those of which we have the form, but not the organisation. 2. Those of which we have both form and organisation. 3. Those of which we know the structure, but are ignorant of the outward form. What has yet to be done is the correlation of the first and last of these three groups. That most of the plants of the coal were cryptogamic was long ago demonstrated by Brongniart. This is more true even than the demonstration supposed. These plants are chiefly Calamites, corresponding with living Horsetails—*Lepidodendra* and their numerous allies—now represented by the Club Mosses, Ferns in great numbers, and plants supposed to represent the Pines and Ferns of the group known as Gymnospermous exogens. The Calamite was a lofty jointed plant, with a hollow pith, surrounded by a woody zone arranged as a circle of longitudinal woody wedges, the whole being encased in a thick bark. When sand or mud entered the pith cavities, it was pressed against the inner edges of the woody wedges, which indented the cast with longitudinal grooves, while a thick ring of pith, remaining at each node, occasioned transverse constructions at each joint. The casts thus moulded, and covered with a thin film of coal, the only remnant of the original wood and bark, constitute the objects generally known as Calamites. But the professor exhibited sections, tracing up the plant from minute twigs to large stems, the least of which had been 27 inches in circumference. Hence these plants, in their maturity, must have been arborescent. He pointed out that most of the objects which had hitherto been associated with these stems as leaves and fruit belonged to an altogether different group of plants. Their true verticillate leaves and fruit have nevertheless been found. The most conspicuous objects in the carboniferous forests were certainly the Club Mosses—plants which, whether creeping over our grassy uplands or forming the undergrowth of tropical forests, are now of dwarf dimensions, and possess a corresponding simplicity of organisation. On the other hand, the *Lepidodendra* and *Sigillariae* of the coal measures had stems rising like—

The mast
Of some great admiral—

and of proportionate bulk. This stem sustained a cluster of branches densely clothed with leaves, and sustaining innumerable cones, while the roots, in the form known as *Stigmarias*, spread as widely underground as those of a British Oak—the proverbial type of all stability. These gigantic dimensions required a different organisation from that which sufficed for the dwarf living representatives of these forest trees, and such an organisation was provided for them. The Professor then traced the processes of growth by which young twigs, with a structure like that of a living Lycopod, when converted, by the addition of successive layers of woody tissue to the exterior of what previously existed, into stems 12 feet in circumference. A double woody cylinder was thus formed. There was an inner one surrounding the pith, and which was a development and expansion of the central vascular bundle of the young twig, and an outer one, formed of exogenous layers. Of these two cylinders, the latter alone entered the roots, and the former the leaf-clad twigs; hence the sap absorbed by the roots from the soil had to be transferred from the one to the other of these cylinders in order to reach the leaves. It was this class of plants whose cones furnished the macrospores and microspores, the nature of which was discussed in the earlier part of the lecture. Closely allied to the Lycopods are the elegant little plants known as *Asterophyllites* and *Sphenophyllum*. These were long believed to be the branches, leaves, and fruits of Calamites; but they constitute a group of which the organization of both stems and fruits is altogether distinct from that of Calamites. The Professor next reviewed various forms of the stems and leaf-stalks of Ferns, some of which he had succeeded in connecting with the leaves to which they belonged, after which he described the

fossil remains of plants of the Pine tribe, of a remarkable form of which both the stems and the fruits are not uncommon in the coal-measures. He gave his reasons for believing that these trees grew apart from the other more succulent coal-measure plants on higher and drier ground, their fragments having been floated down to the carboniferous deposits as drift wood. The plants thus far noticed by the lecturer were entirely confined to the two groups of Cryptogams and Gymnospermous exogens, or Pines. The question arises, Were there in that age no representatives of the Dicotyledonous and Monocotyledonous plants—that is, plants of the ordinary flowering types? Several such have been included in published lists, but, on investigation, they all melt away. One which has been believed to be a Palm the Professor showed to be a Fern. Another regarded as a near ally of the Broom-rape was now known to be nothing of the kind. The evidence that any such plants existed during this early age of the world was of the most unsatisfactory kind, and all the known carboniferous deposits from Greenland and Australia told the same tale of a cosmopolitan vegetation limited to the Cryptogamic and Coniferous types. The physiological teachings of these ancient fossils were next examined. The existence of an exogenous process of growth in the stems of Calamites, Lycopods, *Asterophyllites*, and others, was dwelt upon as a phenomenon which has no true counterpart in the living plants of the same types, and it was further shown that this mode of growth was also absent, or so nearly so that the faint exception only proved the rule—from all the fossil and recent Ferns, whether herbaceous or arborescent; and the Professor concluded his lecture by pointing out that the hue of the carboniferous vegetation must have been one unbroken green, like that which Mr. Wallace has shown to be characteristic of tropical forests of the present day.

OBITUARY.

WE regret to announce the death, on last Wednesday week, of M. Barillet, so well known as an accomplished writer in foreign horticultural journals. M. Barillet had long been suffering from a distressing liver complaint, and, at the time of his death, was trying the waters at Vichy as a last resource. Our lamented colleague was not less distinguished for his botanical knowledge than for his skill as a practical horticulturist.

LAW NOTE.

Gathering Mushrooms.—The Ashford magistrates, on Tuesday, were applied to for summonses against persons who had gathered Mushrooms in a meadow without leave from the owner. The magistrates told the applicant that they were unable to issue a summons, Mushrooms not being the subject of larceny. Some surprise has been expressed at this; but the fact is that the act of gathering Mushrooms is not an offence under the Larceny Act, nor are Mushrooms property within the Malicious Injuries to Property Act. A question has been asked in the *Justice of the Peace* as to whether there is any remedy for gathering Mushrooms on the land of another and taking them away. The reply is that if damage is done to the field there is a remedy under the Malicious Injuries Act, and if a trespass has been committed there is another remedy. Supposing there be no trespass (as when there is through a field a public foot-path), there is no remedy for the gathering and carrying away of Mushrooms. By the common law, larceny cannot be committed of things which savour of the reality, and are at the time they are taken part of the freehold. Mushrooms are of this description, and are not cultivated roots within the 37th section of the Larceny Act. More, the act of taking Walnuts or Chestnuts from a tree growing in a field is not an offence, provided no damage is done to the tree."

COVENT GARDEN MARKET.

SEPTEMBER 26TH.

Flowers.—Plants in pots are abundant and, in general, excellent. Cut flowers are tastefully arranged in bouquets, button-holes, and wreaths, these consist for the most part of Stephanotis, Violets, white Camellias, Tuberoses, Forget-me-nots, and Bouvardias.

Prices of Fruits.—Apples, per half-sieve, 9d. to 1s.; Chillies, per 100, 2s.; Cobbs, per lb., 1s. to 1s. 6d.; Figs, per doz., 6d. to 2s.; Filberts, per lb., 1s. to 1s. 6d.; Grapes, hothouse, black, per lb., 1s. to 6s.; Muscats, 2s. to 6s.; Lemons, per 100, 1s. to 25s.; Melons, each, 2s. to 4s.; Nectarines, per doz., 3s. to 8s.; Oranges, per 100, 12s. to 24s.; Peaches, per doz., 6s. to 12s.; Pears, per doz., 1s. to 4s.; Pine-Apples, per lb., 3s. to 6s.; Tomatoes, per doz., 1s. to 2s.; Walnuts, per bushel, 12s. to 20s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 1s. 6d. to 3s.; Beans, Kidney, per half sieve, 1s. 6d. to 2s.; Beet, Red, per doz., 1s. to 2s.; Brussel Sprouts, per half-sieve, 2s. 6d.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Cole-worts, per doz. bunches, 3s.; Cucumbers, each, 3d. to 6d.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 3d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 4s. to 6s.; button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 9d. to 1s.; Potatoes, per bushel, 3s. 6d. to 5s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsify, do., 1s. to 1s. 6d.; Scorzoneria, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, per bunch, 4d. to 8d.; Vegetable Marrows, per doz., 1s. to 2s.; Brussels Sprouts, per half-sieve, 2s. 6d.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

EXHIBITION OF FUNGI AT SOUTH KENSINGTON.

THE prizes offered for Fungi by the Royal Horticultural Society, brought together on Wednesday last, one of the finest collections of both edible and poisonous kinds we ever remember to have seen. Many species of merely botanical interest were exhibited, but what we propose on this occasion is to look at the question of Fungi from an economical point of view, that being the one most likely to be of general interest. We have in this country many species that are more or less fit for food; but, owing to the imperfect knowledge which the generality of people possess respecting them, they are for the most part neglected. Fungi are much used as food in Australia by the natives, and kangaroos are said to search for and devour them with avidity, while in Terra del Fuego a species of *Cyttaria* (*C. Darwinii*) forms the most substantial food of the natives during lengthened periods. In Northern Europe many different species of Fungi form a staple article of daily food. In Norway, Sweden, and Russia, species that are here considered either poisonous or worthless, are there preserved in large quantities for use during severe and protracted winters. Among the kinds most used as food in Northern Europe we may instance various *Agarics*, as *A. deliciosus*, *A. Rossula*, and *A. melleus*. Three or four species of *Boletus* are also regularly eaten in large quantities. In Russia all the edible species, and many which we regard, as a rule, as unwholesome, are either grilled with butter and oil, or boiled in water, and then preserved for several months in vinegar highly seasoned with pepper and other condiments. This last plan is a tolerably safe one for testing questionable species. Tons of edible Mushrooms are annually dried in ovens for winter supply in Northern Europe, where gigantic Pine forests furnish ample supplies. We are, therefore, much behind our neighbours as regards the conversion of Fungi into wholesome food. The only kinds at present used either in this country or in France are the common field Mushroom (*Agaricus campestris*), horse Mushroom (*A. arvensis*), Truffle (*Tuber aestivum*), Morel (*Morchella esculenta*), and occasionally *Agaricus personatus*. In addition to these we have repeatedly eaten the vegetable beef-steak (*Fistulina hepatica*), a fleshy parasite on the common Oak, the gravy from which is most delicious; the taste of the Fungus itself, however, more resembles that of a bullock's liver than a juicy steak. *Agaricus procerus*, the parasol or partridge-breasted Mushroom, with its near ally, *A. rachodes*, we have repeatedly eaten stewed in milk, much to the horror of our friends, although both are superior to the best cultivated Mushrooms as regards delicacy and flavour. The pretty little Fairy-ring Champignon (*Marasmius oreades*) often found abundantly in pastures, is one of the best of all the edible kinds, either when eaten fresh or when dried for stews and soups. In addition to these we have *Boletus edulis*, *B. scaber*, *B. flavus*, Gigantic Puff-ball (*Lycoperdon giganteum*), *Cantharellus cibarius*, *Lactarius deliciosus*, and *Hydnum repandum*, besides many others less generally known as respects their esculent qualities. In recommending Fungi as food-plants, we have to contend against two of the greatest obstacles to progress—ignorance and deeply-rooted prejudice; but we hope yet to see the time when both good and bad Fungi will be better known than at present. In selecting Fungi for food, the recent case of poisoning at Hammersmith shows that caution must be exercised, or unpleasant consequences may be the result. Nevertheless, most of the species which we have named are easily recognised without any special knowledge, and they are all not only palatable, but in many cases, when nicely cooked, delicious. It is perhaps too much to expect that elementary lessons on botany should be given in our national schools, but it does seem an oversight to send youngsters adrift without any knowledge of our commonest food-producing plants. Our best authorities agree that edible Fungi possess nutritious properties in a very high degree, and it is to be

regretted that valuable food should be lost in large quantities simply because we lack the knowledge necessary for its collection and utilisation.

THE GOLDEN CHAMPION GRAPE.

To rise superior to difficulties used to be a great characteristic of the British gardener, and to grow intractable things in the best manner his pride. But Mr. Fish has found the Golden Champion to be intractable with him; it spots and rots, while with others it shrivels to a perfect sweetmeat, and without asking the reason why, he swoops down upon it in a hostile manner, and would fain wage a war of extermination in regard to it. Now, I say, if *A.* can grow Golden Champions, why can't *B.*? Shall I answer the question? *B.* fails, simply because he does not observe the conditions indispensable to perfect success. Mr. Fish knows full well that neither in the animal nor vegetable kingdom does every member luxuriate to perfection under precisely the same circumstances. Concerning the Golden Champion I have the fullest possible reason—that of perfect success—for believing that it will yield to proper treatment. Four years ago I built and planted a range of Vineries for a professional gentleman in Nottinghamshire, and had full permission to plant what varieties I thought proper. Among others the Golden Champion found a place, and so complete is its success that, paradoxical as it may appear to Mr. Fish, both the White and Black Muscat of Alexandria are being cut away to make room for the (in reality) Champion.

WILLIAM P. AYRES.

6, Waterloo Place, Pall Mall, W.C.

WITH reference to the discussion respecting the merits of the Golden Champion, permit me to say, that some varieties, of little value generally, succeed exceptionally well in certain localities. For instance, Busby's Golden Hamburg (generally considered worthless), is every year the handsomest-looking Grape in our Hamburg-house. Its bunches this year average over 2lbs. each, and several bunches are over 3lbs., the crop being a full one. Every gardener knows that for flavour or keeping qualities it does not equal the Muscat; but, for autumn use, its noble appearance on the desert table entitles it to greater consideration than it generally receives.

Henham Garden, Suffolk.

JAMES GROOM.

TOBACCO TRIUMPHANT.

THE British Anti-Tobacco Association will be terribly affected by some painful intelligence which appears in the *Virginia Territorial Enterprise*. It seems that Professor Manlesel, a German gentleman who has lately arrived in that city, has invented a scheme for laying Tobacco smoke on to houses like gas, and is now engaged in erecting extensive works in Virginia for that purpose. The Tobacco is to be burned in large retorts, and the smoke thus produced will pass through pipes to a large bell-shaped receptacle of boiler iron, where it will be cooled, purified, and so scented, that it will have the flavour of the finest Havannah cigar. From the smokeometer a main pipe will lead up into the city, and from this will be small branch pipes leading to all the principal houses in the town. In every house where the smoke is taken there will be a meter more delicately constructed than a gas-meter for measuring and recording the amount of smoke consumed. Running from these meters will be pipes leading to all the rooms in the house, and connected with these pipes will be long flexible tubes with amber mouth-pieces for the convenience of smokers, who will only have to turn a small silver thumb-screw, and the cool delicious perfumed smoke will glide into their mouths. For smokers in the street the Professor has invented india-rubber receptacles fitting to the chest, which, when inflated with smoke, greatly improve the appearance. Connected with these bags are flexible tubes ending in amber mouth-pieces, which may be tucked into the waistcoat pocket. Smoke thus provided will be freed from nicotine and other injurious elements, and the expense of smoking will be considerably reduced.

At a recent meeting of the Court of Common Council, a long and animated discussion took place with reference to the site of a new fruit and vegetable market in the City. It was contended on the one hand that Farringdon Market, if rebuilt, with new approaches, would prove the best site; and, on the other hand, that the vacant land adjoining the new Meat Market was preferable. It was pointed out that the latter was close to the Metropolitan Railway, whilst the promoters of the scheme for utilising the present market attributed its failure to its inconvenience. Eventually the old site was chosen by a large majority.

NOTES OF THE WEEK.

HERR MAX LEICHTLIN writes to Dr. Regel, informing him that, having transplanted a specimen of *Lilium Coridion* into heath-soil, its flowers changed in colour from sulphur-yellow to red, so that the plant exactly resembled a specimen of *L. Partheneion*. Dr. Regel considers this a proof that both are but forms of the same species.

WE are informed by Messrs. Munro and Wilkinson that in 1870 they grew at Potters Bar 25,000 Cucumbers, and sold them in the London market for £534 9s. 4d.

THE Royal Horticultural Society has announced that its Chrysanthemum show, which was to have been held at South Kensington on the 5th and 6th of November, will not take place until the 12th and 13th of that month.

It was stated last week (p. 250) that the estimates for laying out Roundhay Park, Leeds, varied from £53,670 to £84,600. We have since been informed that the lowest estimate was £29,000, and that the highest was £165,000.

THE second volume of M. Boissier's valuable work—"Flora Orientalis"—has just been published. It extends as far as the Cornaceæ, and fully maintains the high reputation of its author as an able and accomplished botanist.

ONE of the finest illustrations we have seen for a long time is the coloured figure of *Iris iberica*, which appears in the current number of the *Revue Horticole*, and which displays the beauty of the flower in a more charming manner than we remember to have seen in any other illustration of the same plant.

MR. McNAB told us the other day of a curious observation of his with reference to transplanting large specimens of the genus *Sorbus*. It is, that if moved when leafless they invariably die. To transplant them with perfect safety the operation must be performed when they are in full leaf, in July or August.

FROM the report of the *Albany Cultivator* on the recent great American Pomological Congress, we learn that the new State of Nebraska, where the first fruit-tree was planted not more than fifteen years, "made a magnificent show of Apples, including two hundred and seventeen varieties." This State obtained the first prize for a "State collection" of Apples.

THE *Times* (says the *Metropolitan*) has been hoaxed again, or, at least, it looks very much like it. Some one has thrust greatness on Mr. Barlow, a Hanover Square vestryman, and informed the *Athenæum* that "the local authority" has accepted a gift of trees from that gentleman, and the *Times* copied the statement. The "local authority" has declined to plant trees, and Mr. Barlow is not likely to lay out £100 for Plane trees.

SEVERAL of the French journals are complaining about the immense exportation of fruits and vegetables to England, and declare that, not only does this raise the price of garden produce at home, but that the English take the best of everything. It is calculated that nearly a hundred million pounds weight of fruit has been sent to England this year as against fourteen million pounds weight exported in 1860.

ACCORDING to the report of the French Commission, who have been investigating the effectiveness of various insecticides commonly employed, neither paraffin oil nor alcohol is sufficient to prevent the reappearance of the American blight on Apple trees, which had been temporarily freed from it by the application of these remedies. Similarly, neither oil, whether applied alone or in conjunction with soap or flowers of sulphur, nor poisonous substances (including a solution of caustic potass), have been found effectual in preventing the reappearance of scale on Pear trees, which, last year, had been thoroughly cleansed from it.

SOME of the Fellows of the Royal Horticultural Society, especially debenture-holders and compounders, feel, says the *Builder*, a little disquiet with respect to the present position of affairs, and want to know what is doing at South Kensington and who is doing it. Since the old Council went out, making a very poor fight, by the way, and the new Council or quasi Council went in, there has been a dead silence beyond the doors of their meeting-room. Whispers, or rather echoes of whispers, have, however, reached the outer body to the effect that the new Council is no Council at all, not having been properly appointed, and that any acts of theirs would be illegal, so that the old Council could not even negotiate with them if they were desired. If this be true (we are not able ourselves to assert it), and that a lawsuit to settle the legality of the governing body looms in the distance, coupled with the assertion that the lease is actually forfeited to the Commissioners of 1851, to whom the Society owes some £30,000, it is surely time for the Fellows to look into the matter for themselves, and take such steps as may seem necessary. We have heard it said that the Commissioners would probably not object to release the Society from all their obligations, pay the debentures (£49,000), and take the

gardens for the use of the public. But, of course, there would be two words as to that. Anyhow, something must be done.

WE understand that the Royal Caledonian Horticultural Society intends to hold a great international fruit and plant show in Edinburgh in 1875.

THE Guernsey Lily (*Nerine sarniensis*) is now beginning to flower freely in pots, and its beauty and easy culture, both in cool conservatories and in sheltered borders out of doors, ought to recommend it to all lovers of late-flowering bulbs.

ONE of the noblest-looking flowers we have seen for a long time is that of *Lilium Krameri*, as figured in the current number of the *Botanical Magazine*. It is supposed to be a hybrid between *L. speciosum* and *L. japonicum*, and is likely to prove a hardy garden plant of the highest value.

WE learn from the *Botanical News* that "Mr. Watson has printed, for private distribution, under the title of 'Topographical Botany,' the first part, containing all the Dicotyledons, of his summary of the distribution of British plants throughout the 112 counties and vice-counties of Great Britain."

THE very remarkable Bromeliad, *Caraguata Zahnii*, is finely figured in the current number of the *Botanical Magazine*. It is one of the most brilliant of plants, the leaves being coloured green, crimson, and yellow. It was introduced by Messrs. Veitch, and named by them, in compliment to its discoverer, Mr. Zahn.

MR. W. J. VEITCH, of Exeter, writes to us to say that last week, when at Torquay, he had the pleasure of seeing, in the grounds of Rock End, the Variegated Aloe growing on the bare rock, and throwing up a most luxuriant spike of bloom, at least 10 feet high. He also mentions that it is extraordinary what a distance the suckers of this Aloe run from the parent plant.

HERE, says the *New York Tribune*, are Tomatoes to talk of! They are of the Trophy kind, were grown near Irvington, New Jersey, by Mr. Nelson Taylor, and some of their dimensions are as follows:—One cluster of eleven, very compact on a short branch, weighs 13 pounds 9 ounces; a single specimen measures 22½ inches in circumference, the largest 28½ inches, and weighs 3 pounds. They are smooth and firm after the manner of the Trophy.

TWO very singular Peaches are figured and described in the August number of the *Gartenflora*. One, named the Scharali Peach, is a long, pointed, Almond-shaped fruit, with a greenish-yellow skin. The other, or Tarali Peach, is an irregularly shaped fruit, roundish at the base, and slightly pointed at the apex, with a yellow warty skin, which becomes purplish-red near the stalk. The quality of this Peach is very good, and the flesh is melting and has a decided Cinnamon flavour. Both kinds are natives of Upper Armenia and Persia.

A VERY curious and handsome shrub from Java is described and figured in the August number of the *Gartenflora*. This is *Euphorbia plumerioides*, which grows from 6 to 10 feet high, and has floral leaves of a bright red colour, which give it a very ornamental appearance. The branches are about as thick as a goose quill. It requires a temperature of 55° to 60°, and blooms from November to January. In Java this plant is much used for the decoration of burial-places.

WE learn from the *Florist* that the vegetable crops in the gardens at Keswick Old Hall, Norwich, have been nearly consumed by the Purple Clover Weevil (*Apion apricans*), which has travelled from a stack of Clover hay just outside the garden wall, and threatens to eat up everything, if some means are not found to check its progress. The vegetables that have suffered most are Celery, Parsley, Broad Beans, Parsnips, Scarlet Runners, French Beans, Peas, Lettuce. The insects do not, however, appear to care for the Cabbage tribe.

A NEW and handsome species of *Iris* has bloomed this year in the Botanic Gardens at St. Petersburg. It was discovered in Turkestan by Herr Oberst Korolkow, and sent by him to Dr. Regel, who has named it *Iris Korolkowi* in honour of the discoverer. It grows about 3 feet high, and produces its flowers in pairs. They somewhat resemble those of *Iris iberica* in colour, being of a dull white ground, thickly marked with deep purple veins; the outer divisions of the flower, however, are only bearded along the central nerve. The plant is well figured and described in the August number of the *Gartenflora*.

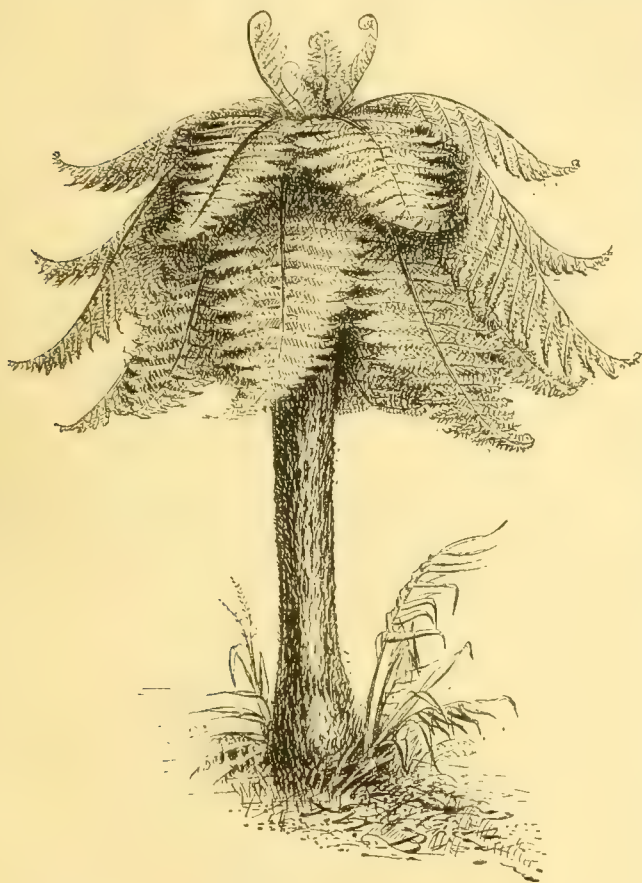
THE following remarkable instance of vitality in the Orange tree is related in a foreign journal:—"Two persons, to whom an Orange tree had been bequeathed, not being able to agree as to their respective shares in it, resolved at last to divide it into two equal parts by sawing it through from the top to the bottom. This was accordingly done; each removed his part, covered the wounds made by the saw with a mixture of clay and cowdung, and planted it. The result was that, by degrees, the bark covered the exposed surface, and each of the halves became a perfect and healthy tree."

THE INDOOR GARDEN.

A NEW WEEPING TREE FERN.

(CYATHEA BURKEI.)

This is one of the most beautiful of all tree Ferns, and deserves to become extremely popular. Our illustration was taken from a noble specimen of it, imported from Southern Africa by Mr. W. Bull, of Chelsea. It appears to be rather difficult to import in good condition, as the trunks have to be brought some hundreds of miles down the country before they are shipped, and frequently suffer on the journey. In habit it is perhaps the most graceful of all tree Ferns, its ample light-green feathery fronds sweeping elegantly downwards, as shown in our illustration. It may be grown in an ordinary greenhouse or cool conservatory, and, when fully developed, forms a most attractive object. It grows freely in the usual compost, making fine pendent fronds from 4 to 6 feet long, and from



New Weeping Tree Fern.

2 to 2½ feet in breadth in the widest part. The stout reddish-purple mid-ribs are tubercled, and furnished at the base with a profuse quantity of slender chaffy scales. The trunk is dark-coloured, and nearly a foot in diameter in the thickest parts, the imported specimens varying from 5 to 10 feet in height.

FILMY FERNS.

UNDER this heading I intend to offer a few remarks upon the cultivation of those exquisite and fragile-looking members of the Fern family included in the genera *Trichomanes*, *Hymenophyllum*, *Flea*, *Hymenostachys*, and *Leptopteris*, which, on account of the extreme delicacy of their fronds, have become general favourites. Much diversity of opinion would seem to exist as to the position the genera *Hymenophyllum* and *Trichomanes* should occupy in the classification of the various tribes which constitute the order Filices, for whilst one of our greatest Botanical authorities separates them from the true Ferns,

others have given them the post of honour, and have placed them at the very head of the list. They ought, however, to occupy, I think, the lowest position in the order, their structure being the very simplest to be found among Ferns. The majority of the Filmy Ferns, which have been introduced to cultivation, will thrive in a lower temperature than would at first seem reasonable by merely mentioning the name of the country from which they came, but it must be borne in mind that although many of them are natives of tropical countries, they almost invariably affect considerable elevations in mountain forests or in deep shady ravines, and thus it will be readily understood why they do not require the excessive heat which some would have us believe is necessary to their successful cultivation. At the same time there are some species which will not thrive without brisk stove heat. The question is frequently asked—are Filmy Ferns difficult to grow? My answer is, certainly not; but they will not suffer neglect, on the contrary, they must be well cared for, and the conditions of atmosphere and temperature required for their healthy growth must constantly surround them. An abundance of humidity in the air, combined with a subdued light and a quiet atmosphere, are the three essentials to be provided for their well-being. With some few exceptions, however, they dislike heavy gloom, yet, on no account, should the sun's rays be allowed to reach them. In providing the necessary moisture, my advice is, never to use the syringe. Some growers, it is true, sprinkle their plants frequently overhead, and I am aware that some are sufficiently robust to withstand this treatment, but it is equally certain that this course, if continued, will cause many to exchange the delicate green of their fronds for a dingy brown, and even black, hue, and thus they will become small by degrees, although not beautifully less, whilst the practice of syringing woolly-haired species brings speedy death. The syringe may, however, be used amongst Filmy Ferns with advantage, if confined to the sprinkling of the floor, stages, or walls, which, with some pans of water for the purpose of evaporation, will be found sufficient for thoroughly charging the atmosphere with moisture, and for producing a nice dew-like condensation on the foliage, which is what they thoroughly enjoy; for, although the fronds of Filmy Ferns should never be allowed to show the slightest tendency to curl, I do not consider it essential to their well-being that they be kept constantly in a drenched state, and those who preserve the happy medium—i.e., neither swerving to the over-dry nor to the over-wet system—are those who will be rewarded with the greatest amount of success. For the cultivation of Filmy Ferns upon a large scale, a house should be specially provided for them, but in such a structure quantities of other Ferns would grow more luxuriantly than they would do in an ordinary stove or greenhouse. For such a house I would take advantage of a natural narrow ravine, if such existed in the grounds; roof it in with glass, and glaze each end. Here would be a splendid house on the natural style, which would be comparatively inexpensive, both to build and to heat. In the fitting up of such a place, blocks of sandstone should be provided for species with creeping rhizomes to cling to, and on account of their retaining the moisture so congenial to the fine roots of these plants. This, however, is not attainable by all Fern growers, and the next plan is to have a few large Wardian cases, fitted up with sandstone to form miniature rocks and valleys, in order to gain more surface than the mere width and length of the case would allow. Or the walls of a plant house may be covered with glass doors, and suitable recesses made for the reception of many species of Filmy Ferns, which, for convenience sake, may be divided into two sections—first, those with an erect stem, and second, those with creeping rhizomes. All species belonging to the first section should be planted or potted in the usual manner, the soil to be good rough fibrous peat, a little loam, plenty of sharp sand, and live *Sphagnum Moss*; always bearing in mind that good drainage for the roots is absolutely necessary. Those species belonging to the second section, which have creeping stems, usually produce a quantity of what may be called adventitious roots, which cling to any congenial surface, and blocks of sandstone suit them admirably, therefore they should be fixed in such a position as will enable them to adhere to some pieces of material of this kind, which

they will soon clothe with a delicate drapery of rich green fronds. There are a few species which cannot be brought into either of the above sections, two of which will be found in the following enumeration, viz., *T. brachypus* and *T. Ankersii*. These species have scandent stems, but are entirely destitute of adventitious roots, and depend entirely upon the true roots which fix them in the soil. Such species should be planted upon some rocky eminence, and allowed to grow downwards; or they would form beautiful objects in rustic hanging baskets.

Many of the Filmy Ferns here enumerated are, unfortunately, somewhat rare, and, therefore, expensive, but others are now reasonable in price, and within the reach of persons of moderate means; moreover, all the kinds here quoted as thriving in greenhouse temperature may be grown in a Fern case in the drawing-room, and if a heated case is at command, any of these delicate gems may be enjoyed thousands of miles from their native forests or mountain glens, in many instances it may be even in greater perfection than when seen in their wild habitats; and this, too, by dwellers in crowded cities, who have not a yard of ground to call by the name of a garden. We are indebted to the Messrs. Backhouse, of York, for the introduction of many species; and in their establishment great care is taken of these lovely and delicate plants. The Botanic Gardens at Kew also boast of a considerable number of species, but after these establishments, the finest grown plants and the largest collections that have come under my own notice, have been the property of dwellers in towns and cities, where Wardian cases and various contrivances had been adopted to facilitate growth, and render them suitable for room decoration.

In the cultivation of a great number of these plants, it is impossible to maintain the temperature exactly to a degree, nevertheless I consider a uniform temperature a matter of considerable importance in the cultivation of Filmy Ferns, for in the gloomy shade of the mountain forests and dark ravines in which many of them exist, we are told the variation of temperature is very little, and my own experience with them goes to prove that a quiet, somewhat shady, atmosphere, and a tolerably uniform temperature always produce the best results. The greenhouse kinds thrive well, as a rule, in a temperature of say from 40° to 60°; as a matter of course, during the hot summer months, it is almost an impossibility to maintain so low a temperature, unless the system of introducing blocks of ice into the Fern case or Fernery were adopted, but I am unaware how the plants are affected by this; perhaps those who have had experience in this style of decoration, as so successfully carried out at the Promenade Concerts in Covent Garden Theatre, could enlighten us on this point. The species included in the enumeration of stove kinds enjoy a temperature ranging from 50° to 75°. As the beauty of these plants depends entirely upon the brightness of their rich green pellucid fronds, and as it is almost impossible to clean them when once soiled, it becomes a matter of the greatest importance that pure and clean water should be used whenever they may be sprinkled over head, hence the advantage of keeping the surroundings sufficiently moist, for by condensation all impurities are removed or left behind. G.

(To be continued.)

TREE AND CLIMBING CARNATIONS.

We are pleased to see that Mr. Blackley, of Leyton, has issued a list of his Tree and Climbing Carnations, illustrated by means of coloured and other representations of the varieties which he cultivates. From his cultural instructions we extract the following:—Although (he says) Tree Carnations have usually been designated perpetual flowerers, such, in reality, is not the case, for one plant, according as it has been shifted and treated, will only bloom for its limited time, and from the bloom-spikes it has been tempted to send up—and to get a succession of blooms a considerable number of the same plants must be kept. This is not the case with the climbing varieties, which, once started to flower, will continue to bloom unceasingly if properly treated. The propagation of these varieties is most readily effected by means of cuttings or pipings taken in spring. These should be from 3 to 4 inches long, and should be taken from good strong shoots only. They should be cut with a sharp knife, close to, but just under, a joint, the cut being made

straight across. The frame or pan in which they are to be struck should be perfectly air-tight, thoroughly well drained, and filled with a compost of good turfy leaf-mould, adding a little silver-sand or finely-sifted coal ashes. The bottom leaves should be cut off close with a pair of scissors, but the grass must not be cut at the ends, as formerly was done, and still is done, to a great extent, but should be left in its natural state. The cuttings being thus prepared, should be inserted deep enough in the compost, but not so much as to let the joints of the uncut grass touch the mould, and they should be placed 2 or more inches apart, according to accommodation. The frame or pan in which the pipings are placed must have a gentle, but steady bottom heat, and they should be watered with tepid water from a fine rose till the compost is as wet as mud; then place the glass over them and leave them undisturbed for three weeks, when every cutting will be rooted, let them have a little air then, but keep them well watered, and pot them off at the end of four weeks. Should they require watering before the expiration of the three weeks this should be done without removing the glass, where possible, as, for instance, a bell glass, not quite so large as the pan for which it is used, will enable you to well water the whole without lifting the glass. They should now be potted off singly in small 60-sized pots, using the same compost as already recommended, adding a little thoroughly rotten dung. When well established in the above pots, they should be shifted into their blooming pots, say 40's or 48's, according to their strength, and placed out of doors on cinder ashes during the summer months, carefully stacked and tied, and always well looked after with water. The greatest enemy to Carnations is red spider, and to cure this I give the very best recipe. To two gallons of rain water add half a pound of soft-soap, previously dissolved in hot water; to this add one ounce of sulphur-vivum (black sulphur), finely pounded, and syringe the plants affected thoroughly well, and one dose will suffice to effect a cure. The red spider is produced by a dry heat, and will not be found in a house having a moist atmosphere. It can hardly be seen by the naked eye, but its presence may readily be detected through the foliage losing its rich healthy bloom, and assuming a seared yellowish dry appearance.

The variety called *La Belle* is a climber or trailer, and will not flower until it has attained a growth of from 2½ to 3 feet, and, if kept in too warm a place, it will not bloom till it is 4 feet in height. It must not be stopped, as it has the habit of sending out laterals, or branches from every joint. These branches often bloom when only from 6 to 12 inches in length; but, as it requires plenty of air, it will be seen that it is detrimental to its usefulness and beauty if all these laterals, together with the main stem, are fastened to a single stake. A trellis of some sort is absolutely necessary, and, as the plants should be placed out of doors in a sheltered spot from June till September, a balloon-shaped trellis will generally be found most useful. There is yet another advantage possessed by *La Belle*, a great desideratum, which is as follows:—When a good price is paid for a plant, it is not a little provoking to find it go off or die, without hope of reproducing it without fresh outlay. Now, this cannot take place with *La Belle*, or, in fact, with any of my plants, for two reasons. First, they each produce abundance of grass, which is easily propagated to ensure a constant supply of young plants; and, secondly, if at each shift the plant is potted two or more joints deeper, the original plant will never go off. The latter mode has been adopted by me for years, and plants which, many years ago, ought, under the usual treatment, to have died, or, at least, gone back—i.e., ceased to produce flowers equal to what they did in their younger days—may now be seen with stems like little trees, and blooming in all the gladness of strength and youth. This is wholly to be attributed to the deep potting.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Prickly Pears.—I have a Prickly Pear under glass, about 7 feet high, with four blooms upon it. The plant, I imagine, is well half thirty years old. May I ask if it is a rare occurrence for Prickly Pears to bloom in this country? M. W., Bath. [It is not uncommon for Prickly Pears to bloom in this country; in fact, grown plants generally do so every season.]

Lapageria alba.—Plants of this are now in bloom in Messrs. Veitch's nursery, in a cool conservatory. It is, without doubt, one of the handsomest of autumn-flowering indoor-climbing plants, and not being a particularly strong grower, it does not over-crowd the roof of the conservatory or greenhouse in which it is planted; and just produces flowers in sufficient profusion to be effective. The rose-coloured kind and this might be grown so as to allow the blossoms of the two to intermingle with good effect.

Dipladenia Brearleyana.—A plant of this at Mr. Bull's is now bearing fifteen trusses of rich deep crimson flowers. When they first open they are of a pale rose colour, but afterwards they change to an intense dark crimson. In addition to the trusses that are open there are many young ones coming forward. This plant will, doubtless, become a favourite not only on account of the brilliancy of its flowers, but also on account of its habit, which is short-jointed for a climber. The flowers each measure 5 inches in diameter.—P.

THE FRUIT GARDEN.

ORCHARD HOUSE FRUITS.

BY PETER GRIEVE, CULFORD GARDENS.

The Apricot.

THE Apricot (*Armeniaca vulgaris*), like most of our fruit trees, belongs to the great natural order, Rosaceæ. It is of eastern origin, and was introduced into England from the Levant at so early a period as the year 1548. In its native habitat the winters, though dry, are cold and severe; and during early spring, when the Apricot is in bloom, hot sunshine, accompanied by piercingly cold wind, not unfrequently prevails. When this fruit is grown under glass in this country, it is found to be of the greatest importance, in inducing the fruit to set freely, that the structure the plants occupy should be thoroughly ventilated. Indeed, it has very frequently been found, when this necessary condition has not been fully complied with, that a complete failure in obtaining a crop has been the result, although the trees may have been perfectly healthy and the bloom abundant; so that very little apprehension need be entertained as to injury likely to result from draughts or cold cutting winds prevailing during the time these trees are in bloom. The Apricot is also fortunate in being, to some extent, exempted from the attacks of insect enemies, such as the aphid and red spider, so troublesome, and even sometimes destructive, to the Cherry and the Peach, &c.; so that fumigation and constant syringing are not at all necessary in their case, and possibly rather injurious than otherwise. They are, however, subject to the ravages of a small leaf-rolling caterpillar, which is sometimes very troublesome, and the only remedy for which is, I believe, careful hand-picking. On this account it is always advisable to have these trees, whether in pots or planted out, as much as possible by themselves, in order that these necessary conditions may, as far as possible, be accorded to them, without greatly interfering with the requirements of the other inmates of the structure. Indeed, in cases where it is necessary to grow these trees in an orchard-house along with other species of fruit trees, it may then be advisable to adhere to the pot system of culture, using soil or compost such as has been already described; as this method affords the means of removing all or any portion of the trees into the open air, where they can be placed for a time, under a north wall or in some other suitable position, and by this means very considerably prolong their season of ripening. But when a separate compartment can be assigned to them, it will then be advisable to plant the trees out in a properly prepared border of soil and where every other necessary condition can be accorded to them, and it will then be found that more desirable results will be secured than would be obtained by retaining the trees in pots.

For some years a collection of bush or half-standard Apricot trees were grown in the orchard houses here in pots, along with other fruit trees, but with indifferent success; and they were ultimately planted out in a line in front of the Apricot wall, some 12 feet high, and about 70 yards in length. The bush trees were planted at a distance of $5\frac{1}{2}$ feet from the wall, and 4 feet from stem to stem. At a distance of $7\frac{1}{2}$ feet from the wall, strong posts or studs were fixed in the soil 6 feet apart, and $6\frac{1}{2}$ feet high, to these was fixed a strong rail or plate, and resting upon this plate, and upon brackets under the coping of the Apricot wall, are placed old lights, which had formerly formed a greenhouse, thus forming a glass roof for the entire length of the wall. The front is formed by weather board to the height of 2 feet from the ground; and the remaining $4\frac{1}{2}$ feet is covered, when necessary, by a curtain of frigi domo, which can be let down and taken up at pleasure, with little or no trouble. Thus the trees trained to the wall, as well as the bush trees in front of them, are all sufficiently protected, when danger from frost is apprehended. The lights are so placed as not to fit quite close to the wall, so that a circulation of air is constantly maintained, which can be increased when necessary by a portion of the lights being so arranged as to be easily drawn down. When the fruit is fairly set, and all danger from frost past for the season, the lights and the curtain are all of course removed, and again put on about the beginning of the following February.

The bush trees have now been planted where they are at present for about ten years, and they generally bear good, and sometimes heavy, crops of fruit, which ripens later by about three weeks than that of the same sorts trained to the walls, which is found to be an advantage. They do not appear to have in any way interfered with the health or well-being of the trees upon the wall, although it might have been an advantage could the bush trees have been planted at a greater distance from the wall. But this was of course necessarily determined by the length of the old lights.

With regard to the most suitable varieties of this fruit there are certainly none to surpass in excellence the sort long known as the Moorpark variety, which may safely be recommended for all purposes; that is for training to walls, for pot culture in orchard houses, or to be planted out in prepared soil, under glass, and trained in the form of either pyramids, standards, or bushes. To this may be added the Peach Apricot, a large and very fine variety; also a few trees of Hemskirk, Kaisha, Royal, Shipley's, St. Ambroise, and Musch Musch, &c. But the sorts above named will furnish a collection sufficiently large for any establishment.

The Grape Vine.

The Grape Vine (*Vitis vinifera*) is a native of various countries, and belongs to the small natural order Ampelideæ, of which it is the type and representative. In this country the Grape Vine is generally grown in structures expressly devoted to its culture, the value and importance of its delicious fruit fully compensating for all trouble and expense incurred in its cultivation. It is moreover in all the stages of its development a very ornamental plant, as well as being exceedingly accommodating in its habit of growth. There are few orchard houses large or small, span-roofed or lean-to, where space may not be found for a Vine or Vines, without greatly (if at all) interfering with the other inmates of the structure, either trained to pillars supporting the roof of the house, to wires over the pathways, or in some other way, so as to lend beauty and interest to the interior of the structure, and also to produce abundance of the most delicious fruit. If desired, Vines can also be grown in pots, in the orchard house, in various forms, such as training the rod spirally to stakes fixed in the soil of the pot, or in the form of a dwarf bush; and also in the form of a low standard, or tree. The latter form is, I think, to be preferred for orchard house culture, and may be produced in the following manner:—Let the plant be a strong rod, established in a 12 or 14-inch pot; let a neat but strong stake be fixed in the soil of the pot, not however so near the stem of the Vine as to injure it. To the head of this stake should be fixed a circular strong wire hoop, some 18 inches or 2 feet in diameter; and at a height of some 4 or 5 feet (more or less as may be desired) from the surface of the pot tie the rod to this stake, and cut it at the bud which is nearest to a level with the hoop, but rather under than above it, as the heart of the tree or standard must be formed by the two uppermost buds. The shoots produced under these are to be stopped at the second or third leaf, and are ultimately to be cut off altogether, so that, during the first season only two shoots can be produced, which must be tied down to the wire hoop. These may each be allowed to produce a bunch of fruit, and should be stopped at the leaf above the bunch.

When winter-pruned, these shoots should each be cut to two or three buds from the base of the shoots, so that six shoots will probably be produced during the following spring, which may each be allowed to carry a bunch. The shoots being each neatly secured to the wire hoop, the head of the standard tree will now be formed, and the stopped shoots on the stem should be cut clean off. Grapes grown in this manner hang down gracefully under the foliage, and have a very pleasing appearance. They should be potted in rich fibrous loam, enriched with a portion of rotted manure and half-inch bones. They should also be occasionally surface-dressed with "Meredith's Vine manure," a rich and very fertilising preparation. These standard Vines should not be intermixed with the ordinary orchard house trees, but should be placed with the Figs in the warmest part of the house. The sorts may be Black Hamburg, White and Royal Muscadine, Sweetwater, &c.

Red and White Currants.

The Red and White Currant (*Ribes rubrum* and *Ribes album*) are indigenous to Britain. They are the only varieties of this family which may be considered as worthy of a place in the orchard house. The Gooseberry appears to have been tried, but has not been found to be well adapted to the purpose. A few plants, however, of the former might be formed into standards, similar to the Grape Vines before described, and would be found interesting and also useful, as their fruit forms a very agreeable addition to the dessert, more particularly that of the white variety. Both sorts are improved by being grown under glass. The best sorts for this purpose are, the Red Grape, Knight's Long Bunch, Raby Castle, and White Dutch.

The Strawberry.

The Strawberry is indigenous to Britain, and all the desirable varieties of this delicious fruit may be successfully grown and fruited in the orchard house. The plant should be prepared in the usual way, as if for forcing, and should be well established in pots not exceeding 6 inches in diameter, and should receive their last shift as early as possible during the month of August. They may be wintered in cold pits or frames, or may be plunged, to the rim of the pots, in the open border, and be protected by having some light littery matter shaken over them. Should the weather set in very severe about the end of February or the beginning of March, they may be brought into the orchard house, and, if this structure be a lean-to with glass front, a portion of them may be placed upon the soil in front of the trees, while another portion of them might occupy a shelf near to the top of the back wall, so as not to be at a greater distance from the glass than 18 inches or 2 feet. In large and span-roofed houses shelves can be suspended from the rafters over the centres of the paths, or in the same position as those in which it has already been recommended to train the single stem of a Vine. The pots, when placed upon such shelves, should always be set in pans or saucers to prevent drip falling from them, and care must, of course, be taken not to allow water to accumulate and stagnate in the pans. Before the fruit begins to change colour, it should be neatly supported by stakes, to prevent it from coming in contact with the soil, or from hanging over the sides of the pots. Treated in this manner, the fruit will be finer and will ripen at least a fortnight earlier than that of the same sorts in the open air, and will also have the advantage of being clean and free from being damaged by birds, slugs, and insects. The best (or at all events good) sorts for this purpose are Keen's Seedling, British Queen, Mr. Radcliffe, Dr. Hogg, Sir Joseph Paxton, and Sir Charles Napier, &c.

GATHERING PEARS.

At a certain stage in the growth of all kinds of fruit there are distinct outward marks developed that always indicate maturity. These marks soon become familiar to the practical fruit-grower, who at a glance sees the specimens fit for gathering, while those not so far advanced are left on the trees a few days longer. Beginners are always at a loss to know the proper time to pick their crop of Pears. If taken off the trees too soon, the fruit withers before ripening; while, if left on too long, loss follows from evaporation and decay, the fruit being of an inferior quality. To avoid these evils, then, should be the aim of those fruit-growers who are not already familiar with this part of the business—an important one for those who grow Pears for profit. There is a change in colour that takes place in pears that is a sure sign of ripeness to the experienced eye. This is always accompanied by unmistakeable marks which, if consulted by the novice, there need be no loss from untimely picking. The seeds of Pears always change from a light to a dark-brown colour when the fruit is matured, and will, when gathered then and placed in a proper place, ripen without withering. Another and safe rule to follow in gathering Pears is to watch for the swelling of the end of the stem attached to the twig, and, by raising the Pear gently by hand, it separates without effort; while, with a green specimen, no such separation will take place unless force is used. Neither for home use nor market should Pears be allowed to ripen on

the tree, for the quality of such will always be inferior to those ripened in a dry, dark, and cool atmosphere.

Pears intended for market should be hand-picked, sorted into two sizes at the time of gathering; and a stem upon each Pear is an important appendage, making a difference in their favour of from 10s. to 20s. per barrel, which is the most convincing argument. In practice it seldom happens that all the fruit on a tree is fit to gather at the same time. Going over the trees two or three times in a period of the same number of weeks, taking off each time the fruit far enough advanced, will be found the best practice to follow. In picking, sorting, and packing, avoid rough usage; for, whenever Pears are bruised, they rot before ripening, and of course such blemishes will tell against the fruit. Delicate and thin-skinned sorts are more easily injured by rough handling than varieties with tough skins, like Duchesse d'Angoulême, Beurré Bosc, and Lawrence; but, whether tough or tender, rough handling should be avoided. Pick Pears only on dry days, and under no circumstances is it best to pack such fruit for market until it has cooled off, which it will in a few hours if placed in a dry, cool atmosphere, to which darkness should be added if the fruit is kept in bulk for any length of time after picking. Where the latter is the case, it is well to turn the heap over by hand, say once in ten days, taking out bruised or decaying specimens. No vegetables should be stored in the same room with Pears, for the latter are sure to acquire the flavour of the former.—*New York Tribune*.

Good Flavour in Pears.—The question of Pears having a better flavour in one place than in another is more often a fault in the tree than in the locality. Fruit growers know that now and then they will get a Peach (for example) that is destitute of flavour, while one of the same kind, perhaps not ten yards off, is all that can be desired. So I have found it to be with Pears. I will instance two: Beurré d'Éil, an admirable Pear, which Mr. Gilbert omits in his list. I have one in my garden, a standard, of excellent flavour; I planted another five or six years ago. The fruit of the latter is far finer to the eye than in the original tree, but it has no more flavour than a Turnip. I planted a tree of Marie Louise at the same time. It grew to a splendid pyramid some 12 or 13 feet high, but the fruit was never worth a straw, though splendid to the eye. I put in two others a year or two after, and the flavour is excellent. My process, when I get such a tree, is not to do away with it, but to graft it with some other Pear, and in two years I get a crop, while in three the tree is as fine as it was when grafted. It is quite possible that situation, as regards exposure or shelter, may have something to do with the matter; and, though I do not question that there may be also something in locality—because we know that we cannot grow many of the Jersey Pears to get the flavour—yet there is also some allowance to be made for the tree itself. Joséphine de Malines is one of the best late-keeping Pears grown. It is not large, but keeps very late, has a fine flavour, and may be grown either on the pyramid or espalier.—F. F.

Figs.—I have been fruiting a large collection of Figs to see which are the best worth growing, and I think there is no doubt that the Bourjassotte grise is the finest variety in cultivation. This is the same kind which has been long cultivated at Clumber under the name of Blanche, a most inappropriate name for it, because the outside is a greyish-green, and the inside very dark crimson. Many persons think highly of white Marseilles Fig, I think it a very over-estimated variety. When in fine condition it is good, as most others are, but the flavour is often very poor. The Bourjassotte grise is never bad, and hardly ever second-rate; in fact, I never gather a fruit without expecting it to be first-rate. As many persons want to plant a Fig, and perhaps only one, let me advise them to choose this kind in preference to all others.—J. R. PEARSON, *Chilwell*.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

New Early Peach.—Having tried most of the early Peaches, my experience leads me to think that Hale's Early is far the best early Peach in cultivation. With me it has proved much earlier than Early York, much larger, and on comparison better. In fact, if I were asked to name the six best Peaches for flavour, I should give Hale's Early as one of them.—J. R. PEARSON, *Chilwell*.

The Totofski Apple.—As evidence of the early period at which this Apple comes into bearing, *The Western Farmer* mentions that Mr. Tuttle of Baraboo, had 100 bushels of these Apples on the trees in his nursery rows, some of them only two years old. This early bearing habit, the hardness of the tree, and the early ripening, beauty and fair (though not first class) quality of the fruit, are thought sufficient to render the Totofski worthy of being more extensively planted than in time past, particularly by those who are at present destitute of Apples.

THE ARBORETUM.

A NEW CHERRY.

(CERASUS LANNESIANA.)

This beautiful rose-flowered Cherry, to which we have already alluded more than once, is a native of Japan, and was first introduced into the Jardin d'Acclimatation, in Paris, in 1870, by M. Lannes, of Montebello, after whom it has been named. The habit of the tree very much resembles that of the wild Cherry. The leaves are long-stalked, oval, slightly attenuated at the base, which is usually truncate, abruptly contracted towards the apex, and then ending in a long point, margined with very long and narrow teeth. The flowers, which are of a rosy flesh-colour passing into pale rose, are long-stalked and arranged in umbel-like clusters, the bases of which are furnished with laciniated stipules. The flower-buds are of a bright rose-colour. The petals are five in number, spreading, oboval, and bifid. The flowers are single and nearly 2 inches across. Like those of almost all species of Cherry, they first appear in the beginning of April, and when the tree is in full bloom it is almost entirely hidden under the mass of rosy flowers with which it is covered, and is positively brilliant in its effect. As plants of this species flower while very young, it affords valuable subjects for pot culture, with a view to table decoration. The plant from which our illustration was sketched was only 16 inches high, and the flowering branch, which was about as much in length, was densely covered with bloom. There is no question that *C. Lannesiana* is an ornamental tree of the highest merit, combining, when in flower, the effect of the delicate tinge of rosy Apple-blossoms with the freer grace of the longer and slenderer shoots and the brighter foliage of the Cherry tree. In addition to the ornamental character of this variety, it adds the advantages of being perfectly hardy and easily grown in any soil in which a common wild Cherry tree will live. The best mode of propagating it is by grafting it on the wild Cherry, either by cleft-grafting or by budding. M. Carrière, to whom we are indebted for the foregoing account, considers it probable that this is the type of *Cerasus Sieboldii*. Our illustration, while in some degree exhibiting the profusion in which the flowers are produced, gives no idea of the charm of tint displayed in the coloured plate of M. Carrière, from which we have re-produced it.



Lannes's Cherry.

crowded with Oak spangles than I have ever noticed them before. In Mr. Leo Grindon's "Trees of Old England" (Pitman, 1870), p. 23, there is an illustration of a leaf so jewelled, and in Prideaux Selby's "Forest Trees," p. 287, it is shown that each of these spangles is the nidus of a cynips, which in due course discloses a grub, upon the rupture or cutting open of the matured spangle. The perfect insect makes its appearance in May. The spangle begins to become raised or bossed at the fall of the leaf. I enclose an Oak leaf covered with these spangles, being curious to learn whether I am right in considering if it be exceptionally crowded with

them. [Yes.] Mr. Tegetmeier states in his work on pheasants that that bird is exceedingly fond of the grub which issues from each of these little bosses. —J. D.

The Preservation of Wood.—The application of wood to the rough and trying purposes of street paving, renders any inquiry into the means of assuring its preservation of great interest. At Toledo, Ohio, blocks were found to be, at the end of four or five years, entirely rotten; yet, when the wood paving at the corner of King and Jordan Streets, in Toronto, was taken up after some two or three years' wear, it was found to be practically as good as new. It had diminished only from one-sixteenth to one-eighth of an inch; but, although the surface had thus been ground down, it was, by that very process, rendered almost as hard as iron. Toledo blocks had been coated with tar. The probability is that the latter had been thus treated while the wood was still green or moist, and that the superficial covering served to confine the moisture, and so to make the process of softening or rotting away all the easier. Instances are mentioned by an experimenter—M. Melsenns—in which prepared blocks, into the sinuosities of whose woody fibres the tarry preparation had penetrated, after exposure to alternate steam baths and frosty weather, and to burial in wet or marshy soil, were perfectly sound and uninjured after twenty years' trial. A section of a piece of timber impregnated with tar shows that the conserving substance has followed the lines of the longitudinal fibres, and the microscope often reveals the complete filling of the pores, and every channel which might give entrance to deleterious agents is plugged by the tar, which, in many cases, is also found a perfect preserver of bolts, screws, and nails. It

must be clear that no such results as these could be attained without a careful selection and preservation of the wood in the first instance. Then it becomes a question what is the best preserver, regard being had to cheapness. Is it carbolic acid or tar, or what? The answer may most materially affect the application of wood where durability is an absolute necessity to its adoption.—*Toronto Globe*.

Graceful Combinations.—We are glad to notice evidence of horticulturists becoming awake to the high natural beauty that may result from allowing climbing plants to grow on trees—their natural supports. Thus, at Messrs. Jackman's, the other day we saw the handsome Clematis montana, growing through Koeleuteria paniculata. The snowy flowers of the Clematis appear among the bare branches before the leaves open on the tree. Graceful combinations of this kind may be made in infinite variety.—W. R.

Oak Spangles.—In the course of a walk about home on the 27th of September, I came upon several Oak trees, which presented an unusual appearance, their under-leaves being more

THE FLOWER GARDEN.

BEST BEDDING LOBELIAS.

HAVING seen in your columns (p. 233) some notes from your correspondent, Mr. J. F. Robinson, on the varieties of *Lobelia* which he considers best suited for making an effective display in the north of England, I think a few notes concerning the varieties of this useful bedding and edging plant from a cultivator in the south of Ireland may be interesting and instructive to some of your readers, especially those residing in Devon and Cornwall, where the climate much resembles that of the south of Ireland.

As to the new *Lobelias* sent out for the first time this year, I got from Messrs. E. G. Henderson, at the commencement of this season, a dozen each of their new varieties, *White Pearl* and *Mazarine Gem*, and single plants of *Drusilla* and *Claudia*, to plant in a trial bed, and propagate if found desirable; also from Mr. Dixon (the sender out of the new double *Lobelia*) a new white variety, named *Nivea*. *White Pearl* I planted round a bed of the two new scarlet *Verbenas*, *Prince of Wales* (Turner) and *Pomerania* (Henderson), and during the early part of the season, for about a month, it was exceedingly effective and pretty, being of the true compact *pumila* type and habit, and the flowers considerably larger than those of the variety, in my opinion, falsely named *pumila grandiflora*; but the flowers are not white enough, the upper lip having a decided bluish tinge; nor is it a sufficiently continuous bloomer, all my plants (the dozen having been divided into twenty-six before putting out) having, after being about a month planted out, developed themselves into good-sized green tufts, with only a single isolated blossom here and there, ceasing to be in any way effective round the scarlet *Verbena*. *Mazarine Gem* is quite the deepest blue and most lovely flower of the kind I have yet seen, and, when it first opened, was much admired; but its habit is much flattered in the coloured plate published by those who sent it out, as it is there made to appear of a close, upright, and erect growth, whereas it is in reality of an exceedingly long and spreading habit. Planted as an outside edging to a double row of that exceedingly beautiful, and most effective, and much-too-little-known plant, the white variegated *Tropaeolum Minnie Warren*, it made a beautiful contrast of colours, but spread quite into and under the leaves of the *Variiegated Nasturtium*. *Iresine Lindenii*, planted between the rows of *Minnie Warren*, made altogether a most effective and beautiful bed. Of the other three new varieties, to which I have alluded, *Drusilla* is of a really erect and compact habit of growth, and bears flowers of a good deep shade, of a medium size, and almost without any perceptible eye. I consider it a variety well worth propagating for next season. *Claudia* is also an exceedingly pretty and effective variety, of a lighter shade of blue, with a large and distinct white eye, much resembling a new variety of last year's sent out by the same firm under the name of *Princess of Wales*. This is of a much more spreading and branching habit, but continued to produce its flowers well on to the end of the season. I consider this also well worth propagating as a companion and contrast to *Mazarine Gem*. Mr. Dixon's *Nivea* is quite the best and purest white I have yet seen, and produces a full-sized flower of the utmost purity, and is of a nice compact medium height and habit, quite superseding Lee's *Purity*, which I have had to discard as too coarse growing. And now that I have disposed of the new varieties of 1873, let me add a few remarks respecting those sent out by Messrs. Henderson at the commencement of the bedding season of 1872, one of which, *Lustrous*, is especially deserving, in my opinion, of the very highest praise, as it has not been even approached for effectiveness or beauty of habit by any of the novelties of this year, much less surpassed. I had a single plant when it was first sent out, and as it grew and could be propagated with the utmost freedom, I had this year sufficient to edge on both sides a scroll-bed, down the centre of which was planted a row of that most effective of bronze bicolor *Pelargonium*, *Black Douglas*. All the plants grew evenly and well, the *Lobelias* being perfect round cushions of deep blue, evenly and profusely blossomed, and in habit perfection as regards shape and compactness.

This bed was the admiration of every one who came into my garden, and all admitted that they had never before seen so beautiful, or in every way effective, a *Lobelia*. The other four varieties may be briefly dismissed. *Advancer* is a Pink, which, though in advance on anything yet seen in that colour as to size of flower, is yet hardly worth growing. *Ne plus Ultra* is the dwarfiest of all the family, and the first season I had it it made a pretty little tuft in the trial bed, but it is extremely difficult to propagate owing to the shortness of its growth. In a fine dry summer it may be worth cultivating as an edging for small beds, but this summer the continued rains seemed too much for it, and it ceased to flower early in the season. The same remarks apply to *Oriental*, which is also of extremely dwarf habit, with a much larger white eye, resembling *Paxtoni*. An older variety, *Serena*, is a very free grower and most continuous flowerer up to the end of the season, producing very large flowers, with a white underlip and pale blue top, in some flowers shading off to almost pure white; this variety is of an exceedingly vigorous habit of growth, and made a most effective broad band round a bed of crimson *King Verbena*. With me the lovely little *Gem Lobelia pumila flore pleno*, has not proved a sufficiently free bloomer to be effective when planted out, the four plants I had having done nothing but grow, and only one of them having produced one or two isolated blossoms. It may prove a freer bloomer in a drier season, or when grown as a pot plant. W. E. G.

AMERICAN COWSLIP, OR SHOOTING STAR.

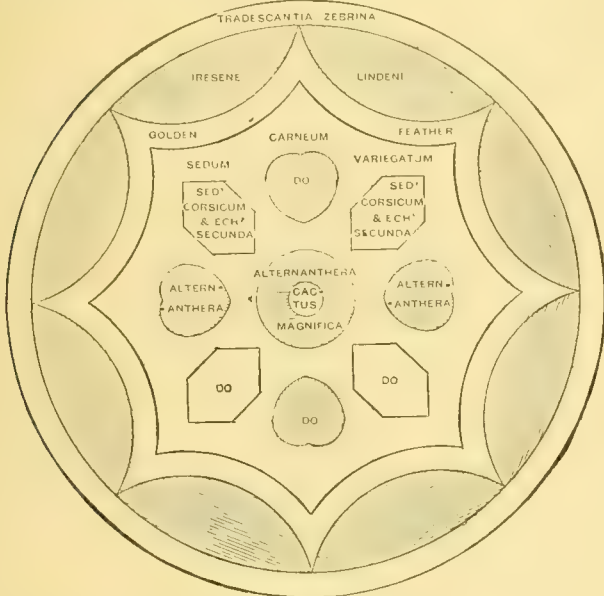
(*DODECATHEON MEADIA*.)

No wild flower of Great Britain, Switzerland, and other parts of Europe is more justly celebrated on its native soil for its beauty and its early appearance in spring than the Primrose. The odd and saucy-looking American Cowslip is the most beautiful member of the Primrose family among the flowers of California and other parts of the United States. Hence its common name, American Cowslip. Gray tells us it is found in rich woods, from Pennsylvania and Maryland to Wisconsin and southward. He also adds, that it is called in the West "Shooting Star," alluding, no doubt, to the manner in which its flower-leaves are turned back. This gives each bloom somewhat the appearance of the bright head of a meteor, followed by a train of light. The reason for this common name is much more apparent than for the systematic one, *Dodecatheon*, from two Greek words, meaning the twelve gods, in allusion to the twelve chief divinities of the Romans. This name was given fancifully by the eminent Linnaeus himself, and we are at a loss for its application, unless it be that he wishes thus to stamp it pre-eminently as a crowning glory among our wild flowers. The specific name, *Meadia*, was given in honour of a Dr. Mead, of Virginia, by Catesby, a pioneer of American Botany, through whom it was first introduced into England from Virginia, as early as 1744. London, in his "Encyclopædia of Plants," describes five different varieties of this handsome plant, with white, rose-coloured, and lilac flowers. Gray describes but one species belonging to the older States, with flowers rose-colour or white. At least three varieties are common to California, the white and the cream-coloured belonging to the hard knolly lands of the plains, the rose-coloured found only in the mountains. In the white, which is the most common variety, the petals, varying in number from five to eight, are a pure white with a straw-coloured spot at the base. This is followed by a ring of a deep velvet-like purple, then a second and smaller ring of a bluish-purple. At the base of each of these rings are small yellow spots. In the centre of the flower, the stamens and pistil unite in a spike of a bluish-black hue. The variety and delicacy of colouring make the entire appearance of the flower one of exquisite beauty. Its odour is strong and spicy, like Cinnamon, and very similar to that of the most fragrant Pinks. Its roots are fibrous, its leaves oval, small and radical, resting flat upon the ground. From the centre of these arises a single flower-stalk, usually from six to nine inches high, without a leaf, and surmounted by a cluster of drooping flowers, varying from four to ten in number. It now only remains to call attention to a difference between the American Cowslip, as found in California, and the species described by Professor Gray. He says the Eastern kind has the calyx five-cleft; corolla five-parted, with five stamens and one pistil. In the Californian species, the calyx is from five to seven-cleft, usually six; corolla five to eight-parted, usually six; stamens five to seven, usually six; pistil one.—RALPHIK. [In addition to the above, two fine species, *D. integrifolium* and *D. Jeffreyanum* may be found in some of our nurseries.]

CARPET BEDDING.

VARIOUS opinions are often expressed as to the merits and demerits of this system of flower gardening; but there can be no doubt as to its general excellence, more especially for small places. Nearly all the plants used for this purpose, with the exception of *Echeverias* and *Sempervivums*, can be propagated either by means of seeds or spring cuttings in a few weeks, and consequently they require no room or attention during winter. Of course in some cases a plant or two must be kept for stock. One of the finest of all carpet plants is the Golden Feverfew, which can be propagated by the thousand from seed. *Alternantheras*, *Iresines*, *Coleus*, the flesh-coloured variety of *Sedum*, and the beautiful soft golden coloured *Mesembryanthemum* may all be struck from cuttings inserted in a genial temperature and a moderate bottom heat. The same remark applies to the new Golden Chickweed, while the Silvery Santolina, *Veronica incana*, *Antennaria tomentosa*, and *Stachys lanata* increase readily in a common frame by division. Many of the larger succulents require more house room in winter than can generally be afforded them, as they have to be removed intact, but they may be used in the way of margins in the greenhouse or conservatory, or even as

struction of cold pits to be used for wintering such things as *Geraniums*, *Verbenas*, &c., the principal object to be secured is dryness, because dampness is a far greater enemy to such plants, and one more difficult to combat than frost. On this account I have an objection to sinking below the ground-level, unless the walls below ground be made perfectly water-tight by cement, and the bottom should be as thoroughly drained as possible. Indeed, it is a good plan either to pave or cement the bottom of the frame or pit to prevent water rising by capillary attraction, in which case there must be holes for the escape of all moisture that may collect inside; and the foundation of the inside should be of open rubble, with a drain to take the water away. Pits sunk a little into the ground and constructed in this way are warmer than when raised above the ground-level. But I would rather have all above the level, and construct the walls hollow, enclosing a stratum of air, which is the best non-conductor. One of the principal points necessary to success in wintering plants without the aid of fire-heat, is that of preparing the plants in autumn. I have already recommended for all cases early and the coolest system of propagation; but this is most especially applicable to the case of those who have no better convenience than cold frames or pits to winter their plants in. Early propagation allows of the plants being exposed to the open air, and enables them to become thereby robust; and their growth is thus ripened or solidified, so that they are not so susceptible of injury from either damp or cold. They of course become well rooted, which is another requisite to success. When it becomes necessary to place the plants in the pits, in order to be secure from autumn frosts, the lights should be drawn off by day when the weather is dry, not a drop of water should be allowed on the leaves, and they should be kept dry to the drooping point. This brings on a state of maturity before winter, calculated to stand a damp, cold, confined atmosphere, and the absence of light, with the least possible injury. In placing the plants in the pit, do not overcrowd them. The pots should be washed clean; and, where the leaves of such as *Geraniums* are crowded, thin out some of the largest of them. Some dry loose material, such as hay or straw, should be in readiness as winter approaches for covering up with in case of severe frost, and some of the same materials should be packed round the sides of the pit. But for this avoid anything likely to heat and prematurely excite the plants by a rise of temperature. When thick coverings over the glass become necessary, the material should, if possible, be perfectly dry, and shaken on as loosely as possible, as the more loosely it lies the more air—the best non-conducting medium—it contains. If over the loose dry material some light covering, such as strong oiled calico, can be thrown, it will prevent cold winds from penetrating, and keep the hay or straw dry. When it becomes necessary, from severe and continuous frost, to keep the glass covered up for a few weeks at a time, and when, perhaps, the thermometer inside the pit would indicate a few degrees of frost, great caution is necessary in uncovering and exposing the plants to light and air when the weather changes suddenly to a thaw. To uncover suddenly, under such circumstances, exposes them to such a sudden reaction as will prove far more destructive than a degree or two of frost. The covering should not be touched till the temperature inside has risen above freezing a few degrees, and then it should not be removed all at once but by degrees. Plants are living things, possessing all the susceptibilities of the most perfect and delicate organism, and are as subject to injury from sudden and extreme changes of light and heat as is the human frame. Many never think of this, or, if they do, are apt to forget it; and so, as soon as it thaws, off goes the covering, and the plants are injuriously affected even by the sudden flood of light, and if they have been slightly frozen they are ruptured by a too sudden thaw, and mould and rotteness follow. Frost should not be allowed to creep in if possible, but if it does, it should be allowed to creep out, not be suddenly expelled. The great points, therefore, in wintering plants where fire-heat cannot be applied are—first, to keep the plants dry, and in as complete a state of rest as possible all the latter part of autumn and winter. Secondly, when it becomes necessary to cover up for any length of time from severe frost, the covering material should be dry and loose. Thirdly, when thaw takes place, do not uncover at once, but gradually, and not till the thaw is complete. All winter watering should be avoided beyond what is necessary to preserve life, and it is much better to have plants at the drooping point than the least over wet. This is equally applicable to plants wintered in spare rooms, and, indeed, even in greenhouses where fire-heat can be used. It is astonishing how little water is sufficient in winter for flower garden plants, and especially *Geraniums*, which are often ruined by late propagation and over-watering in winter. I have frequently had variegated *Geranium* cuttings in 8-inch pots on shelves go without water for eight and ten weeks, and look splendid, although so dry that some would think they would be starved.—D. THOMSON, in "The Gardener."



Flower-bed in the Jardin d'Acclimatation.

window plants, all they require being a light situation where frost is excluded. One of the best arguments in favour of carpet bedding, however, is its permanent character. Ordinary flowering plants are often completely spoiled for weeks together by being subjected to heavy rains, and present a washed-out forlorn appearance. Carpet beds, on the contrary, if neatly planted, look well in all weathers, from the time they are planted out until late in the autumn. Good examples of this kind of bedding may be seen in Victoria Park, Battersea, and in the Royal Horticultural Society's Gardens at South Kensington. Of French gardens, sub-tropical plants constitute the main feature, although the carpet system is attempted in them with good results. Our illustration represents a circular bed in the Jardin d'Acclimatation, which, at the time we made the sketch, struck us as being very effective. The planting and arrangement are better shown by such a diagram as this than could be done by the most carefully-worded description. B.

WINTERING TENDER PLANTS.

In most cases cold pits and frames are all that can be commanded for wintering tender flower-garden plants. There is sometimes an out-house, spare room, or bow-window that can be used as an auxiliary to a pit or frame. With such convenience, indifferent as it may be considered, and really is, it is astonishing how much can be accomplished by judicious management and earnestness of purpose. In the con-

Flower Gardens for Children.—It is desirable on many accounts that children should cultivate flowers rather than fruits or vegetables. Most children are fond of flowers, and all can be taught to love them, and the hardier and commoner sorts at least do not tax the energies so heavily in cultivation as either fruits or vegetables. Besides, since flowers appeal solely to the moral sense, they facilitate the inculcation of generous habits. As children acquire strength and skill, they may gradually be intrusted with the care of vegetables or fruits; but they must be taught to use the products of their little gardens as a means of conferring happiness on others. But of all the lessons to be learned in a garden the most valuable is the art of observing; for so varied, so delicate, so minute, and yet so unerring are the operations of nature, that, though the closest study must fail to fathom her mysteries, the rewards of such study are so rich and so surprising that even the student of tender years is perpetually stimulated to fresh researches. This interest in natural objects, once awakened, will prove an inexhaustible source of pleasure. Botany is, however, not the only study to be pursued in a garden. The sun, air, winds, rain and dew, birds, insects, the peculiarities of soil, all may be studied from nature's ever-open, but too often unheeded, page.

Gowans and Bowans.—I think that Mr. Gillbanks has established an unanswerable case by his remarks on this flower, at p. 245. I am no botanist, but I wish to add what appears to be a strong confirmation of his argument. I once read a report of a lecture, given by some very learned man, on the meaning and origin of curious border and northern proper names. I knew a man of the name of Gowanlock, somewhere about Moffat; and the lecturer told us that it had been originally applied as a nickname to some yellow-haired laddie. We all have seen some Scotch girls with a profusion of bright yellow hair, without the slightest tinge of red, and very beautiful it is. Blacklock is also a common Scotch name. Now, it would be ridiculous to say that a man's hair was the colour of a Daisy. Again, "Roy" is ancient Scotch for red, and Rob Roy took his name from the colour of his hair; vulgar Londoners would simply have called him "carrots." The country name of the Yellow Ragwort is Bowan, or Bowen, but I never saw it in print; our antiquaries think it is Danish. We have a great many Danish and Icelandic words on the border, and in Northumberland. All I know is, that the Ragwort always indicates good deep soil.—CARLISLE.

AUTUMN.

THE Foxglove bells are tolling autumn hours,
The hours of ever-shortening silver day;
The hours that see the moon in full array
Rain on the earth her radiant ripening showers;
The hours when pilgrim corn-fields rest in bowers
Of final bloom, when reapers, binders come,
And wagons go and come from field to home
Oft till the stars sleep on their azure towers:
The twilight hours that hear the robin's late;
The morning hours that see the spider's line
From branch to branch in dewy splendour shine;
The colder hours that see the Bramble's fruit
Blush on its purple path, as Winter's foot
Is heard approaching on the lofty Pine.

—Chambers's Journal.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Early Tulips.—Will you kindly tell me the names of a good scarlet, and also a good yellow Tulip, for early bedding, and about 9 inches in height.—T. H. [The earliest yellow Tulip is Duc Van Thol, which grows about 6 or 8 inches in height, but the one to bloom uniformly with the miscellaneous group of early Tulips is Golden Prince, which grows about 9 inches in height. In the scarlet section, the earliest is Scarlet Duc Van Thol, which grows 6 inches in height, followed by Vermilion Brilliant, 8 inches; Artis, a crimson-scarlet; and La Belle Alliance, a bronze-scarlet, 8 to 9 inches.]

The White Everlasting Pea.—This fine old plant is not nearly so much planted as the coloured form, though the white one is really the better plant of the two. It grows as freely as the old form, often attaining 8 or 9 feet in height, and it is just now one mass of snowy blossoms. The flowers being borne on long slender stalks are well adapted for cutting, and they may be used along with the choicest exotics. It figures largely at present in some of the Covent Garden bouquets. When once planted in good loam it grows like a weed.—W.

Purple-leaved Angelica.—This is a variety of the common *Angelica sylvestris*, which has leaves, stems, and branches of a reddish-purple colour, with a metallic lustre. It reproduces itself with some certainty from seed, although in every sowing a greater or less proportion of green-leaved plants come up. Division of the shoots, however, is a sure method of perpetuating the purple-leaved variety. The size, habit, and colour of this plant render it valuable as an ornamental subject, especially when contrasted with green-leaved plants, or such as have whitish foliage, like *Centaurea caudicissima*, *Gnaphalium lanatum*, &c.—M.

FURZEDOWN, STREATHAM.

This is one of the most pleasing suburban gardens we have seen for some time. The house is surrounded by an expanse of cool green turf, over which one or two fine Cedars of Lebanon stretch their sombre branches. Attached to the house is an elegant conservatory in the architectural style, the interior of which is well arranged for effect. Here we noticed well-grown specimens of *Yucca aloifolia*, *Cycas revoluta*, also a good specimen of *Dicksonia antarctica*, and in the centre a noble specimen of *Cyathea dealbata*, bearing a grand plume of elegantly-cut fronds, bright green above and silvery beneath. This pretty conservatory, the interior of which is seen from the dining-room, is always kept gay with choice flowering and foliage plants, and several closed panels at the back are fitted up with rock-work, on which some of the most delicate exotic Ferns and other foliage-plants are grown, tastefully associated with cascades and fountains in miniature. In prominent positions between the recesses are elegant vases, in which choice exotic plants and Ferns are grouped for effect. Graceful climbing plants droop in elegant festoons from the roof, and give a charmingly natural appearance to the fairy-like scene below. On the lawn, near the conservatory, is a beautiful *Wellingtonia gigantea*, in a sheltered recess. This plant is a perfect cone in shape, fresh and healthy down to the ground, and some twenty feet high. Around it, at a little distance off, are planted golden Yews, the effect of which, when the sun is shining fully on them, is magnificent. Such plants as these light up masses of dull green shrubs which usually preponderate too greatly in most places, especially during winter. Snugly embowered among shrubs and trees is a massive summer-house, covered with Ivies, Honeysuckle, Hops, and Virginian creeper, each scrambling vigorously for the mastery. Left unpruned to ramble at will, these soften down angularities and render art less conspicuous. On the lawn are a fine Service tree, and some nice clumps of Pampas Grass and Yuccas. One of the most interesting features in the pleasure grounds is a pond for hardy and half-hardy aquatics, among which are white and yellow Water Lilies blooming profusely, in company with *Richardia æthiopica* (which does well treated as a sub-aquatic), the greater Water Dock, and on the the grassy margins, a few plants of *Agapanthus umbellatus* just coming into flower. The effect of these aquatics in such a position is very pleasing, and we can only express surprise that plants so beautiful and easy to grow should be excluded from many gardens, where there is every convenience for their successful culture.

In the kitchen and forcing gardens are compact stoves, Vineries, Pineries, and Peach houses, all of which appear to be well adapted for the purposes for which they are intended. Flowering and foliage plants are grown here in large quantities, as well as Grapes, Pines, and Melons. In the plant-stove we found some healthy Orchids, principally grown for supplying cut flowers, and amongst those a fine specimen of *Lælia purpurata* very profusely flowered. In this house is also a fine plant of *Platynerium biforme*, which, when well grown, is a very effective stove epiphytal Fern. All the *Platyneriums* are noble objects for the decoration of the stove or warm conservatory; and in order to convey some definite idea of their peculiarly picturesque appearance we subjoin a sketch of the specimen just alluded to. Among the Ferns a plant of the elegant *Adiantum Farleyense* is doing well and producing a number of young fronds, and all the plants in the Fernery are fresh and healthy, such kinds being chiefly grown as are most useful for cutting and for decorative purposes generally. Vines do well at Furzedown, and there are five Vineries well stocked with fruiting canes of the leading kinds. Peaches inside were a very fair crop, two houses being devoted to their culture, and besides these there are fine crops on the walls outside. Two houses are devoted to the cultivation of Pines, and are well stocked with fruiting and succession plants.

One thing cannot fail to strike the visitor to Furzedown, and that is the profusion of Roses grown all over the place. Roses in pots, Roses on trellises, Roses planted outside, and Roses planted inside; they meet the eye at every turn, and load the atmosphere with their fragrance during the summer and autumn months. A small house or pit, partly sunk below



THE CONSERVATORY AT FURZEDOWN: ENTRANCE FROM THE HOUSE.

the ground level, is used for furnishing early flowers. In this house were strong plants of *Maréchal Niel*, *Gloire de Dijon*, and other leading Roses, planted out, and these produce an immense quantity of beautiful fresh blooms for cutting in February and March. Outside, near the conservatory, a fine trellis of five arches is partly covered with climbing Roses and Honeysuckles; and here, as elsewhere, there is a profusion of choice flowers.

The well-stocked kitchen garden is walled-in, and partly surrounded by a sheltered border, which comes in very handy for early crops of vegetables and for salads. One of the most notable objects in the kitchen garden is a fine wire trellis, erected by Messrs. J. B. Brown & Co., 90, Cannon Street, which extends from one end of it to the other, down the broad central walk. On this are plants of the best hardy climbers and Roses, including a specimen of *Maréchal Niel*, blooming freely and making shoots nearly as strong as one's finger. This form of strong but neat and light-looking trellis is as useful for the fruit garden as for ornamental climbers and Roses. The *Maréchal* is trained over arches in the centre of the garden, and from these, lateral wings extend across in each direction. Trellises of this description look remarkably well, especially when covered with a profusion of flowers and foliage. Among indoor decorative flowering plants those found to be most useful are *Epiphyllums*, which are here grown in quantities for conservatory decoration during the winter months. In the Pineries we noted several fine healthy plants of *Allamanda Schottii*, trained on a trellis close to the glass. Gardenias are planted out for the sake of their pure white delicately-perfumed flowers. The gardener's cottage is conveniently placed at the entrance to the kitchen garden, and is a neat stone structure, the porch overhung with the green leaves and twining shoots of Virginian creeper and the common Hop plant.

Our illustration of the conservatory shows the effect as seen from the dining-room; and also shows the fine effects which may be produced by the tasteful grouping of Palms, Tree-Ferns, Cycads, Yuccas, Ficuses, Araucarias, and other permanent foliaged plants. Conservatories judiciously arranged in this style have much to recommend them, especially where labour is an object, while vegetation, of so rich and varied a character, forms a pleasing background for any choice flowering plants, which may be from time to time introduced.

F. W. B.

INFLUENCE OF THE SEA ON OUR CLIMATE.*

If the Gulf Stream flowed through the middle of the North Atlantic, in the same manner as it does along the American coast, in a narrow rapid and hot current, it would produce but little effect on our climate; but, drifted as it is by the returning trade-wind, it communicates its heat to the wide sea from Ireland to the banks of Newfoundland, and fills the whole space between Norway and Iceland. It is from this greatly extended surface of heated water that our westerly winds derive their warmth and moisture. It is difficult to form an adequate conception of the amount of heat poured into the Atlantic by the Gulf Stream, and drifted northward by the south-west winds. It is only by comparing the temperatures on land and on sea that we can arrive at any approximate result. In January the temperature of the air on mid-ocean is about 53° when in the same latitude, east and west; in the middle of both continents it is 5° below zero: the difference of 58° being equal to more than double the amount of heat which exists in England between the months of January and July. Here then is a cause which produces a much greater influence on local winter climate than the sun; and we begin to comprehend the extent and unfailling energy of that power which reverses the normal position of the lines of equal temperature, and twists them from east to west into north and south curves. Our winter heat comes not from the south, but from the west. But again: the average temperature in January of 50° north latitude, over sea and land, is about 16°; on the same parallel in the middle of the Atlantic it is then 53°; and on our western shores 43°; showing an increase of temperature over the sea of 37°, due to the influence of the Gulf Stream. Assuming that the outlines of sea and land remained the same, with no warm current of water flowing northwards from the torrid zone, then the January temperature of the south-west of England would be as cold as that

of the south-east of Iceland; and on Scotland would fall the cold of the extreme north of Europe.

THE EFFECT OF SEA TEMPERATURE ON THE AIR.

It has been said that the Gulf Stream does not really produce such an effect on our climate as has been attributed to it; that, in fact, the winter heat over western Europe is the result of the south-west winds. Again, it has been urged that the latent heat released by the condensation of moisture on our western coast-line is the cause of our abnormal climate. But even admitting the full effects which these causes produce, we have only to carry the inquiry one step further back, to show that the warmth of the wind and the excess of vapour from the air are both derived from the heated surface of the ocean. It has also been intimated that the south-west wind, returning as an upper current from the torrid zone, falls on the surface of the North Atlantic, and imparts its warmth to the water, and thus raises and sustains the high temperature of the sea around our coasts. This opinion raises a distinct issue. Does the wind impart its heat to the sea, or does the sea warm the wind? The generally-received opinion, that the air which rests on the surface of the sea partakes of its temperature, appears to receive confirmation from the character of the climate of coast-lines—from the nature of the regular alternation of sea and land breezes; and a comparison of the amount of heat in the sea and air of the Atlantic tends also to confirm this opinion. An examination of four voyages across the Atlantic, from longitude 10° to 40° west, gives the following results as the mean of all the observations taken, about the 50th parallel of latitude on each voyage:—

	Temperature of	
	Water.	Air.
	Deg.	Deg.
January 15 to 22, 1849	52	49
" 1 to 6, 1850	54.5	51.6
" 7 to 11, 1851	50.6	49.6
" 19 to 30, 1852 (the storm)	56.5	53.7
Means	53.4	52.2

Showing an excess of the heat of the water above the air of 1.2°. The charts of the American coast also show that in the Arctic current the water and air are in January usually as low as 30°; that when the ship passes eastward into the warm eddy of the Gulf Stream the water rapidly attains a temperature of 57°, but the air lags behind, and its heat gradually increases over a distance of 250 miles before it becomes assimilated to that of the water. In all these cases the water is the governing element, has a preponderating influence, and cannot derive its higher temperature from the somewhat colder air which rests on it.

WINDS.

The wind is the vehicle of climate; it is to us the carrier, bringing warmth and humidity from the west, or continental cold from the east. The wind from each point of the compass impresses its peculiar character on the weather of each day, and it makes or mars the seasons as they pass. It is usual to speak of the variable and fickle nature of our climate, but this characteristic is mainly impressed on it by the indeterminate changes in the direction of the wind. Arranging the winds in the order of their frequency, we have the average number of days in the year for each wind at Greenwich, as follows:—

From the south-west ... 104 days.	From the north-west ... 21 days.
" north-east ... 48 "	" east ... 22 "
" north ... 11 "	" south-east ... 20 "
" west ... 38 "	Calm 34 "
" south ... 34 "	

It will be seen that our prevailing winds are from the south-west and from the north-east; and that the south-west is the predominant wind for eight months of the year, and the north-east prevails from one to two months. There are, however, great inequalities in the persistency of these winds. Thus, in the year 1856 the south-west blew for eighty days; but in 1859 for 128 days. Again, in 1847 the north-east wind prevailed for twenty-three days only; but in 1855 it continued for seventy-four days. The whole character of the weather and the climate of the year is altered by these variations. The activity of the wind appears also to be subject to the same uncertainty, for the number of calm days ranges from seven to eighty-six in different years. The winds from the cardinal points of the compass are tolerably equally distributed throughout the year, but the dry and cold wind in spring from the north-east is a true visitor in April and May. But the most powerful and persistent wind throughout the year is the warm and moist south-wester: it is most prevalent in July and August, at this season often bringing wet harvest weather; it reaches a second and inferior maximum in December, driving back the continental cold till after Christmas, and its influence is often felt through January. Our two prevailing winds, the south-west and north-east, arise from the same cause as true land and sea-breezes, viz., the unequal distribution of heat over the land and the sea. On the west

* Abridged from an article by Nicholas Whitley, F.M.S., in the Journal of the Royal Agricultural Society.

of these islands, as I have shown, lies the wide Atlantic, with a surface heated to 54° in early spring. On the east, the continent of Europe has a temperature from 30° to 10° lower of cold dry air, which becomes extreme in the north-east; and the variable nature of our climate arises from the winds as they prevail from these quarters. Let the cold from the north-east be ever so intense in winter, the powerful westerly wind will drive it back, occupy its place, and, day after day, the thermometer will stand at 50°. The low lands of our eastern coast are exposed to the full power of the cold north-east wind of spring, which also sweeps unchecked over the central plain of England, and settles down at night, with aggravated severity, in the valleys of the Trent and the Thames. If it blows long enough, it falls over the brow of the Cotswolds on the Vale of Berkeley, sweeps through the gorges of our western hills, and then mingles with the warm air of the Atlantic coasts, where the warmth from the sea materially alters its character. The great cold from the east wind on the 23rd of December, 1860, produced a minimum temperature in the valley of the Trent, near Nottingham, of 8° below zero; in the valley of the Thames 3° below zero. At Truro the lowest reading of my thermometer was 13°, and at Tresco Abbey, in the Scilly Isles, it was 2°. Thus in a period of extreme cold the warmth communicated from the sea maintained on our western coast a temperature of 32° above that of the eastern lands.

WET JULYS.

The cause of a wet July must be traced to the south-west wind, which reaches the maximum of prevalence in this month, and its variable weather to the inconstancy of the winds. The south-west wind at this season sweeps the abundant vapour from the surface of the sea, and arrives, laden with moisture, on our western shores at a temperature of 58° to 60°—very nearly equal to the mean heat in the air over the land; but, driven onwards over the hilly surface of the western highlands, it meets with a colder stratum, and the chilled night air also tends to condense the vapour and produce an abundance of rain. In such a season cloud on cloud rolls in from the west till masses of vapour obscure the sun, which day after day no ray of his can pierce; then, long pendant streams of condensing vapour float over the languishing ears of corn, or descend in heavy rain to injure and retard the harvest. But there are seasons when, under the influence of the clear sky of the east wind of spring, the soil becomes so heated by the solar rays that the radiation of heat from the land becomes more than a match for the vapour from the sea. The sun has obtained the mastery, and it gives him the means and the power to maintain it. Then the summer is of the most genial character, and the heat is tempered by the fresh balmy breeze from the west.

EFFECTS OF SEA-TEMPERATURE ON THE CLIMATE.

These effects are principally manifested in a high winter temperature, and in the abundance and distribution of rain. The greatest influence of the warmth from the Atlantic on our shores is felt on the south-western coasts of both England and Ireland; and I have therefore been led carefully to examine the peculiar climate of the Scilly Isles, surrounded by the warm water of the sea and open to the full effect of the south-west wind, twenty miles beyond the Land's End. I obtained from St. Agnes' lighthouse a set of observations extending over twelve years; Mr. Moyle, of St. Mary's, kindly undertook to register day and night thermometers, and has sent me returns for six years. The results reduced to monthly means and

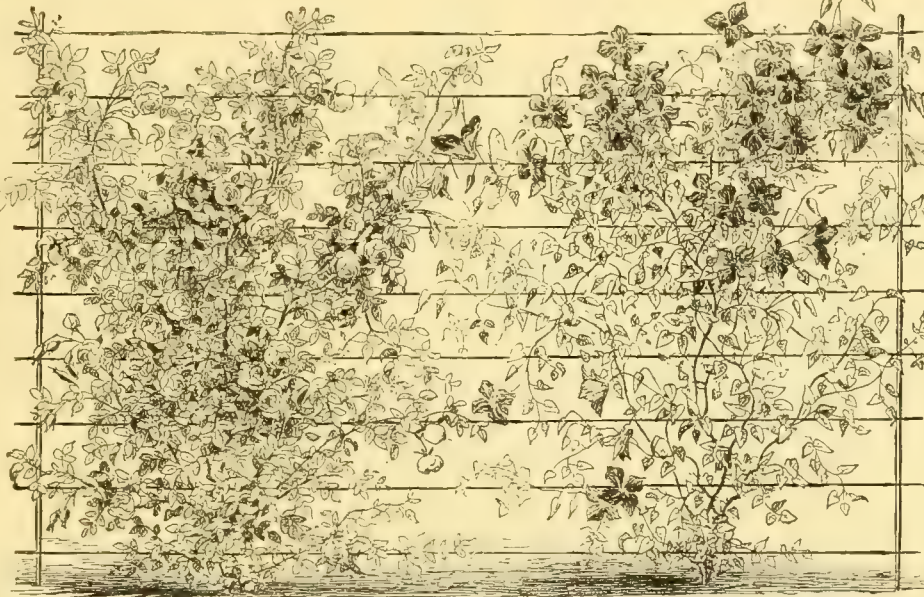
compared with the mean temperature for fifty years at Greenwich are as follows:—

Scilly Isles	Jan.	Feb.	Mar.	April.	May.	June.	Year.
			46.3	45.8	46.3	47.7	52.8	57.6	
			July.	Aug.	Sept.	Oct.	Nov.	Dec.	
			60.2	60.5	58.8	53.7	50.5	48.0	
							52.35		
Greenwich	Jan.	Feb.	Mar.	April.	May.	June.	Year.
			36.9	38.7	41.6	48.2	52.9	59.1	
			July.	Aug.	Sept.	Oct.	Nov.	Dec.	
			61.8	61.2	56.6	50.2	43.1	93.8	
							49.0		

Thus the mean temperature of the islands exceeds that of Greenwich by 3½°, and in the month of January the mean heat at Scilly is 9½° above that of the neighbourhood of London. The temperature of the air upon the Atlantic which the south-west wind sweeps over our coast in January is about 52° before it is reduced by the colder air of the land; and the effect of winds from other quarters is to cause a decline of warmth of 6° at Scilly and 8° on the south-west of Ireland. The following table shows the relative amount of heat at the places mentioned during the winter months:—

	Dec.	Jan.	Feb.	Mean.	Years.
	Deg.	Deg.	Deg.	Deg.	
Scilly Isles	48.0	46.3	45.8	46.7	12
Cork	42.8	43.9	44.5	43.7	10
Sandwich (Orkney)	41.0	39.6	38.1	39.7	7
Penzance	45.2	42.6	44.9	44.2	21
Exeter	42.3	41.0	41.1	41.5	10
Greenwich	39.8	36.9	38.7	38.5	50
Edinburgh	39.7	37.4	38.2	38.4	17
Montpellier	45.7	42.1	41.8	44.2	11

From this table it appears that during the three winter months Penzance has a temperature precisely the same as that of Montpellier; Cork falls short of it by only half a degree; and the heat of the Scilly Isles exceeds this noted winter resort by 2½ degrees. At this season Edinburgh has the same amount of heat as Greenwich, although 350 miles further north; and yet 200 miles further, at Orkney, the winter temperature exceeds that of Greenwich by one degree. I gladly avail myself of a description of the effect of the Gulf Stream



Rose and Clematis Trellis at Furzedown. (See p. 274.)

on our winter temperature by the Secretary of the Scottish Meteorological Society:—"The Gulf Stream leaves its impress unmistakably on the temperature of each of the months, as shown by the position of the monthly isothermals. In winter the deviation from their normal or east and west direction is greatest. Indeed, as regards Great Britain, the lines are then at right angles to this normal direction, and lie north and south. In Ireland they seem to envelop the island with their folds, which increase in warmth from the centre of the island outward to the ocean. This points out clearly that the great source of heat from which the climate of Great Britain derives its warmth is in the west; in other words, it is regulated by the ocean."

The winter warmth is first suffused along the western coast-line, and then sweeps up the valleys which open on the south-west to the sea. A glance at a geological map will show that all the older rock-formations have in these islands a general strike from the north-east to the south-west, and thus govern the direction of many open valleys and mountain chains. This is particularly the case in the south-west of Ireland, where the valleys and bays open funnel-like to the sea; and on the west of Scotland the firths and lochs have a similar arrangement. In England the bell-mouthed Severn opens up a passage for the warm wind to the middle of the country. The flat surface of the middle of Ireland enables the westerly wind to have a clear sweep over most of the island; it afterwards sheds its

heat on the plain of Cheshire, and deluges the Cumberland mountains with rain. The hills which constitute the backbone of England form a dividing wall of climate, which may be traced from the Cotswolds northward along the crests of the Pennine range to the Cheviot Hills. On the west of this line we have the warmth and humidity of the ocean, on the east the dry air and greater summer-heat of the continent. It is a wall which, so far as climate is concerned, divides the arable field from the grazing lands of England; on the one side there is a preponderance of corn-growing power, on the other of meat-producing capabilities. The texture of the soil and the demand at the market may modify this conclusion; but, other things being equal, submission to the teaching of climate will in the long run be found the safest and most profitable course for the farmer to pursue. After the end of April and during the summer months the British Isles receive no warmth from the surrounding seas; but the wide ocean on the west then produces a contrary effect. As the great wave of summer-temperature sweeps northward over Europe, it is retarded by the cooler air from the sea on the western coasts, where the isothermals are bent southward along the coast-line from Denmark to Belgium. The amount of heat which in July rests on the south of England is on the continent extended further north than St. Petersburg; and in this month the summer-heat is as great at Tornea and Archangel as at Edinburgh. The comparatively low temperature of the water of the German Ocean in summer tends also further to reduce the influence which the high summer temperature of Central Europe would otherwise exert on the eastern plains of England; but any defect of our climate due to this cause is more than compensated for by the equality of temperature and steady downfall of rain which we enjoy, and which gave a capability of productive power to the soil of England far greater than the dry summer-heat of the continent could bestow.

THE KITCHEN GARDEN.

PATERSON'S POTATOES.

THE name of Paterson has become so closely linked to the Potato, that a generation must pass away ere it be forgotten, supposing that the descendants of the famous raiser of Dundee should cease sending out any more new varieties. It was the late Mr. Paterson's fortune to obtain more fame than money in repayment for his original outlay and trouble expended on Potato raising; but some of his fellow-citizens, not forgetful of the great efforts he had put forth in his endeavours to improve the breed of Potatoes, made him, in his later days, a handsome present, that must have carried with it some consolation for previous disappointments. Mr. Paterson's great desire was to secure a breed of Potatoes that possessed at once the merits of large croppers, good quality, and of great disease-resisting power; and, although time and circumstances have shown that this latter desideratum has not been secured, it will be admitted that his sorts are all good croppers—some of them very large ones—and that the larger portion of his kinds have the merit of fairly good quality. Few of them, however, can be classed as "garden" varieties, as they are characterised by a very robust growth, that requires the open field and an abundance of space for its full development, but few of them, also, are what is known in the south as early kinds; some of them that are, in northern parlance, termed "early" being as late in maturing here as kinds that we classify as late ones. That Paterson's kinds have obtained considerable favour in the north there can be but little doubt, as strong-growing and somewhat coarse-looking sorts seem to be chiefly grown down there; thus the Scotch Regents and Rocks, Rintoul's white and striped Dons, and Paterson's kinds are mostly grown, and seem to present to the northern grower the finest of first-class Potatoes. The sudden and extraordinary influx of American sorts of Potatoes into this country just at the moment that the Patersons were pushing the sale of their more recent seedlings must have considerably effected their sale, as thousands of persons readily gave a fancy price for the Yankee article without much reference to its table qualities, whilst better kinds offered to them at a cheap rate at their own doors were left to pine in the shadow of cold neglect. Without doubt the height of the American fever is now past; not one grower in twenty will say a good word for the Bresee's section, excepting one or two, in relation to their table qualities. And this deficiency is by no means made up by its large cropping qualities.

It is, however, but fair to say, that in the matter of haulm and ripening most of the American sorts beat Paterson's. Indeed, the robust, or rather coarse growth and lateness of ripening of the latter, have assisted not a little to stand in the way of their more general cultivation. Of all Paterson's kinds the best known amongst gardeners is Victoria, a capital variety; tubers, flattish round in shape, white-skinned, and of good table quality. It has upright, robust haulm, and is late in ripening. This kind is largely cultivated for market purposes, and as a good late keeper, but is best suited for field growth. Perhaps one of the most praised Potatoes a year or two since was Paterson's Bovinia, a kind that has only been recommended for cattle food, and consequently does not come within the range of my observations. Farmers seem to be much taken with it, and no doubt for its special purpose it is a valuable acquisition. Mrs. Paterson, who succeeded to the management of her late husband's business last spring, offered a list of some twenty-two kinds, all of their own raising, but several of these being of later introduction are put forward as improvements upon certain older seedlings, purposely to displace them, so that the list can be reduced in number with advantage. Thus, there is an improved Victoria or Queen Potato, that is a much heavier cropper than the old sort, and is, therefore, more worthy of general cultivation. The earliest sorts in the list, as I find them to be after two years' trial, are their New Early White Kidney, a true Ash Leaf, much in growth and appearance like Lee's Hammersmith Kidney, and not quite so early as Royal Ashtop; and New Early Red Kidney, which again bears a close resemblance to Wonderful Red Kidney, being about as early, and producing tubers much like it in appearance. It is smoother and handsomer than Paterson's kinds generally, and is useful as an early coloured exhibition tuber. Following these comes Zebra, an early second-early kind, having haulms of moderate growth, and producing tubers of great size; in colour ground white streaked with red. Its quality, however, is certainly not before that of Bovinia. Early Perfection closely resembles the Regent in haulm, and in shape and colour of tuber; whilst I find its prefix to be a misnomer, as it is with me one of the latest ripeners; nevertheless, it seems to be a good field variety. Perhaps the handsomest round tuber to be got out of the lot is to be found in Princess Lorne—a flattish, white, round kind, streaked with light purple about the eyes. It bears considerable resemblance to the old Wellington, but has taller haulm and rather larger tubers. It is also a good cropper, and of excellent quality. Some of the largest tubers I have lifted came from Albert or Prince—a strong-growing late kind, and which produces large crops. The tubers are in colour purplish, streaked with white about the eyes; skin rough and netted; this will no doubt make a favourite sort. It does not require a rich soil, but plenty of room and deep tillage. Alexandra is a large late white kind, somewhat resembling Napoleon, which was originally sent out with Victoria, but seems not to have made any particular impression. British Queen is a red-skinned kind, that nearly resembles the old Red Regent, but has longer tubers. I think this kind is excelled for field purposes by the Red Skin Flour-ball. Paterson's New White Kidney is evidently a seedling of the Daine's Matchless section, as it bears the closest possible resemblance to that kind. It is a superior white Kidney fit for field culture, and produces immense crops. The Seedling Fluke turned out so badly with me that I have got rid of it. My last mentioned sort is New Blue Kidney, elongated round in shape; a large cropper and having very white flesh. It is one of the latest ripeners of all the collection. Growers of large breadths for market will do well to give some of Paterson's newer sorts a trial, as in moderate soil they produce large tubers mostly of capital quality. Looked at with the eye of a connoisseur, it is evident that Paterson's seedlings cannot be expected to take any important position as garden varieties; they make too much haulm and have too coarse and deep eyed tubers to suit the modern gardener, and can have but little chance on the exhibition table. Other raisers are making progressive steps in that direction, and may they meet with more present encouragement than in life fell to the lot of the persevering Paterson.

A. DEAN.

THE LIBRARY.

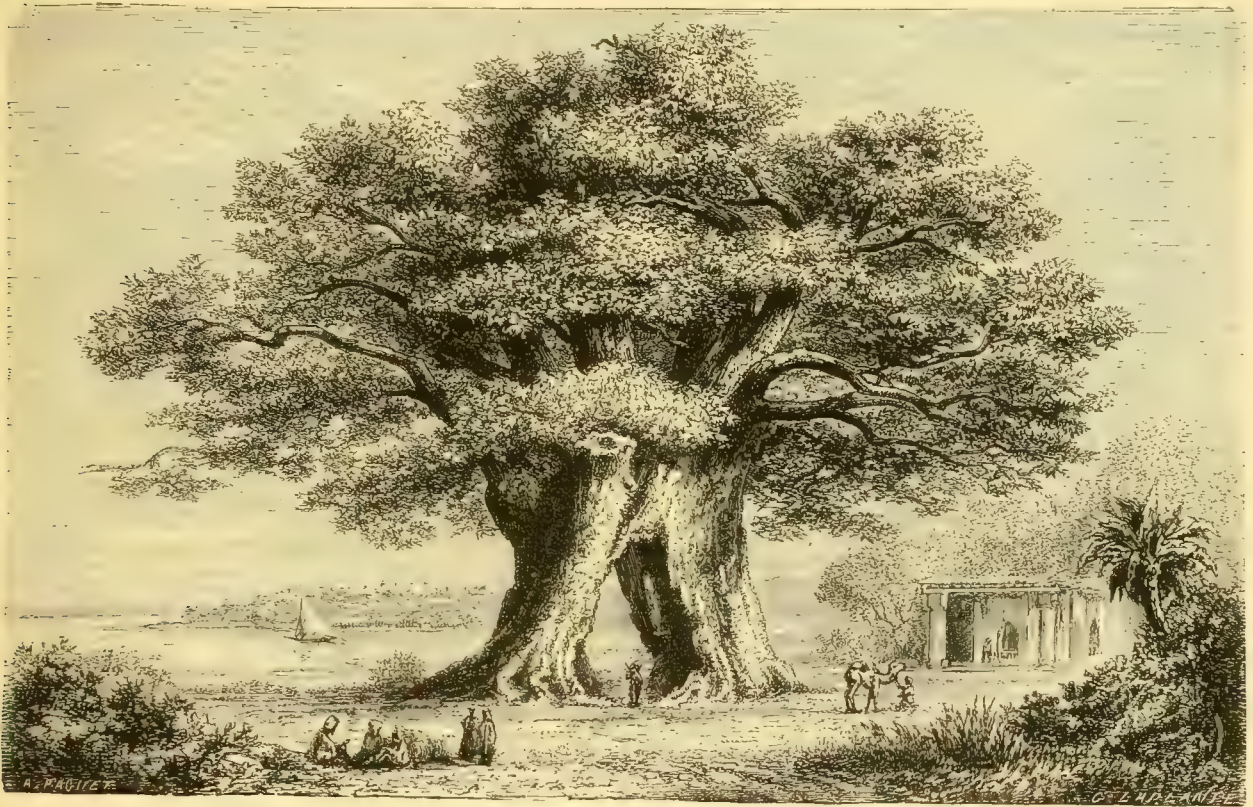
CHAPTERS ON TREES.*

WE welcome this addition to the number of useful books for which the public are indebted to Messrs. Cassell and Co. It does not appeal to the professional botanist or horticulturist, but aims at supplying, in a neat and compact volume, such information on the subject as is likely to be required by the great mass of general readers, such as a description of each tree, its uses, and various interesting facts connected with its history. In addition to this, an illustration is given with each chapter, showing the general appearance and habit of the tree described. These illustrations are forty-one in number, and, as a specimen of the work, we have much pleasure in reproducing one of them in our pages, together with its accompanying descriptive chapter.

THE PLANE.

The Oriental Plane (*Platanus orientalis*) is one of the most

clothed with a bristly down, that, like so many wings, bears them to a distance. Apart from its downy wings, the seed is in the shape of a nail without a head. The balls remain on the tree till the following spring. The growth of the Plane is rapid, and in favourable circumstances it will attain the height of 30 feet in ten years. It lives, also, to a great age, and some of the Plane trees in Europe have a very ancient history to disclose. It is much associated with the history of the Greeks, and a tree lingered for many centuries, which King Agamemnon was said to have planted in the classic city of Delphos. Another tree has a still more interesting history connected with it, and is said to have been planted by Menelaus, the husband of Helen of Troy. There was an island in the Levant, joined by two bridges to the mainland; it was called "Plataniste," because it was covered with Plane trees, and here the young men of Sparta used to perform their athletic exercises. When the wedding day of the beautiful Helen drew near, a bridal garland was made for her of the globe-like catkins of the Plane trees which grew on the island. So magnificent were the Plane trees of Greece, that one of them was said to have stopped the army of King Xerxes in its progress, when he was invading Greece. He was so enraptured with the beautiful



Old Oriental Plane Tree.

favourite trees of the East. It grows to the height of 70 feet, and has wide-spreading branches, and a massive trunk. The bark of the trunk is smooth, and of a whitish-grey, and scales off every year in irregular patches. The branches are round, and a little crooked at the joints, and the bark of the young trees has a purple tint. The large handsome leaves, which are almost tropical in their appearance, are on long foot-stalks, which swell at the base and cover the young buds. Each leaf is cut into four deep-pointed segments, the two outer of which are slightly lobed. The fine large segments have many dents in their edges, and each has a strong mid-rib with veins spreading from it; the upper surface of the leaf is of a shining green, and the under side of a paler colour. Nothing can be more graceful than the manner in which the flowers are produced. Before the leaves appear in spring, a number of ball-shaped catkins are seen suspended by long threads from the tree, from two to five on a stalk. The flowers, which are too minute to be seen by the naked eye, are inclosed in these catkins; and towards autumn, when the seeds in the ovaries are ripe, the balls open, and the seeds come out,

appearance of the tree that he could not prevail upon himself to leave it. Although time was of the utmost importance to him, he lingered for a day and a night, under the shadow of the Plane. And in one of those mad freaks to which he was subject, encircled it with a golden collar, and hung gems and costly articles of clothing upon it; and when at last compelled to quit the spot, he had a gold medal stamped with the representation of the tree that had so enchanted him, and carried it about with him. Ancient historians add that this foolish delay was one cause of the great defeat and overthrow he sustained from the Greeks. The whole history of the Plane is on classic ground. In Athens, it was planted near the public schools, and formed beautiful avenues; and here were the shady walks in which the scholars of old times delighted to muse. Here Aristotle and Plato taught their disciples, and Socrates swore, not by the gods, but by Plane trees. The Romans fully appreciated the beauty of the Plane, and, in imitation of the Athenians, planted their public walks with it. There is a story handed down to us of rather an amusing character. It is said that the great orators of Rome, including the famous Cicero, felt the utmost interest in the Plane trees newly planted in the gardens of their villas; and would, even

* "Chapters on Trees; a Popular Account of their Nature and Uses." By Mary and Elizabeth Kirby. Cassell, Petter, and Galpin.

when engaged in public duties, each one in turn step home and refresh his Plane tree, not with water, but by pouring wine to the roots. Pliny tells us of a tree growing in his time which was in itself a forest, and was in the public road close by a fountain. Its branches were as thick as trees, and covered an immense space of ground. The governor of Lycia gave an entertainment to his friends in the hollow trunk, which was 81 feet in circumference, and had some mossy stones inside like rustic seats. The feast gave great satisfaction to the guests; and they used for carpets and cushions the magnificent leaves of the trees. The rain, which poured in torrents, did not reach them, and they declared they had never enjoyed themselves more, even when banqueting in their marble saloons, with all the wealth and luxury of ancient Rome about them. From the earliest times, the Plane tree has been associated with Persia. The Persian gardens are ornamented with avenues, under which the owners sit and enjoy the balmy breeze. And the Persian performs his devotions under the shadow of the Plane, and hangs upon it the garments and other articles offered as a sacrifice to his deity. Many of these garments hang to the bark by rusty nails, until they drop to pieces of their own accord. The Plane was introduced into England about the sixteenth century, and as an ornamental tree is much valued. The timber is of yellowish-white, until the tree becomes old, and then it is brown, mixed with jasper-like veins. It can be polished to resemble Walnut; but no use is made of it in England. There is another species of Plane tree that grows in America, and is called the Western Plane, to distinguish it from its relative in the East. It is a larger tree, and of more rapid growth, and has broader and less deeply-cut leaves, and the fruit is smooth and much larger. It is found in a vast tract of land in North America, and goes by the name of "Button Wood." The Western Plane delights to grow along the great rivers of the Ohio and the Mississippi, and in the fertile valleys watered by those mighty streams. The lower parts of these valleys are covered with thick dark forests, composed of gigantic trees. The leaves that fall every year decay, and form a rich vegetable mould, that contributes to the amazing growth of the trees. Here the "Button Wood" flourishes in great luxuriance, and is loftier and larger than any of its neighbours. It has a variety of names besides those we have mentioned. Sometimes it is called the Water Beech, or the Sycamore; and often it is named the "Cotton tree," because of the thick down which covers the inner surface of the leaves when they first expand. In the course of the summer, the down becomes detached, and floats in the air in such quantities as to be unpleasant and injurious. When the tree is very abundant, persons in the neighbourhood dread greatly the floating down, which irritates the lungs, and has a tendency to produce consumption. The wood of the Western Plane has a fine grain, and can take a high polish; but though it is sometimes used for bedsteads, yet the cabinet-maker rather avoids it on account of its tendency to shrink. It is a very picturesque tree, and has the property of throwing off its bark in scales, and thus freeing itself from Moss and other parasites. This is done in an irregular manner, first in one place, and then in another; and as the newly-exposed bark is of a lighter colour, the stem has the appearance of being marked in a peculiar and rather striking manner. It is this power of casting its bark that enables it to flourish in the middle of the smoke of London.

WHAT A HOUSE SHOULD BE.*

THE opinions of a professional gentleman, who "was a school-boy at Yarmouth some seventy years ago," and whose maturer years have been fertile of sound suggestions on sanitary subjects, are entitled to respectful consideration. The present volume is dedicated to those who wish to (and can) make for themselves a perfectly healthy home; but the vital questions of sewage and ventilation are dealt with on such broad and sound principles that even our Boards of Health may add something to their extended knowledge by a perusal of Mr. Bardwell's book. The author has written not for show, but for use. If he occasionally slips in his classical quotations, the failure of these little second-hand attempts at embellishment does not detract in the least from the sterling merits of the author's own work.

A Capital Riddance.—The absence of the editor, who is examining the orchards of the Shenandoah, gathering wild flowers in Texas, and studying native timber trees in the Wabsatch and Rocky mountains, will sufficiently account for the superior excellence of the August and September numbers.—*American Gardener's Monthly*.

* "What a House Should Be." By William Bardwell, Architect and Sanitary Engineer. London: Dean & Son.

THE HOUSEHOLD.

FRUITS, AND THEIR VALUE AS FOOD.

THE following table of the "Composition of Fruits," is condensed from a list of fifty-one analyses. The fruits are arranged in the table according to the percentage of soluble matter. This, other things being equal, is a fair measure of their comparative values for food. The percentage of water does not show this value so well, because of the great difference in the percentages of insoluble matters. This latter item consists chiefly of seeds and skins, with a small quantity of insoluble cellulose and pectose, the latter rarely amounting to one-fifth. The sugar in the first column includes both saccharose, or "cane sugar," and fructose, or "fruit sugar." The acid in the second column is expressed as hydrated malic acid.

COMPOSITION OF FRUITS.

KINDS OF FRUIT.	SOLUBLE MATTERS.							Insoluble Matters.	Water.
	Sugar.	Free Acid.	Albumenoids.	Pectic Bodies, Gum, and Or- ganic Acids in Combination.	Soluble Ash Ingredients.	Total Soluble Matters.			
Apples	6.40	.62	.43	7.01	.29	14.83	3.13	82.04	
Apples, another variety ...	7.58	1.04	.22	2.72	.44	12.00	2.96	85.04	
Grapes	12.18	.91	.75	.36	.37	14.57	3.03	82.40	
Cherries	10.29	.79	.94	1.83	.65	14.49	6.01	79.50	
Pears, sweet red	7.47	.91	.25	3.84	.28	11.88	1.63	83.49	
Pears, large Holland ...	1.57	.67	.62	8.30	.67	11.83	7.40	80.77	
Apricots	1.34	.84	.61	7.60	.78	11.17	5.34	83.48	
Gooseberries	7.12	1.43	.42	1.18	.39	10.53	3.12	86.21	
Currants	6.38	2.15	.50	.15	.59	9.77	5.42	84.81	
Strawberries	7.57	1.13	.36	.12	.48	9.67	2.86	87.47	
Whortleberries	5.78	1.34	.79	.56	.86	9.33	13.12	77.55	
Plums, blue and black ...	2.13	1.30	.15	4.08	.52	8.18	4.52	87.00	
Raspberries, garden ...	1.20	1.23	.61	1.58	.43	8.05	4.58	87.37	
Blackberries	4.11	1.19	.57	1.44	.41	8.00	5.59	86.41	
Raspberries, wild	3.60	1.08	.55	1.11	.27	7.51	8.64	83.86	
Strawberries, wild	3.90	1.19	.50	.10	.67	6.75	6.10	87.15	

The above shows how inaccurate is the common notion about fruits. It also shows that the proportion of solids is much larger than it is generally stated in many works on food. The improvement in the nutritive value of fruits effected by cultivation is strikingly seen on comparing the composition of the garden Strawberries and Raspberries with that of the wild varieties. The increase of the soluble or easily digestible matters is very considerable, amounting in the case of the Strawberry to nearly fifty per cent. In the case of the Raspberry, the insoluble matters have diminished nearly one-half in the cultivated variety. Judged by the old standard of the amounts of nitrogenous or so-called flesh-forming constituents, fruits occupy a very low position indeed. But, according to the view now entertained by our best chemists and physiologists, that the true measure of nutritive value is the force or potential energy of the substance, fruits occupy relatively a much higher position. Dr. Frankland gives a table showing the actual energies developed by various foods when oxidized in the body. A sample of Apples containing the same proportion of solids as the first one given in the foregoing table, bore the following relation to other foods, taking one pound of wheat flour as a standard:—

	lbs. oz.		lbs. oz.
Flour	1 0	Bread	1 12½
Apples	5 15½	Potatoes	3 12½
Veal, lean	3 ½	Milk	6 1½
Beef, lean	2 11	White of egg	6 10½
Ground Rice	1 0½	Carrots	7 6½
Hard boiled eggs	1 11	Cabbages	9 3½

Grapes would probably average about 5 lbs. 2 oz., and the other fruits in proportion to their quantity of solid matters. It must always, however, be borne in mind that all comparisons of the nutritive value of foods are only reliable in so far as the foods compared are equally digestible. Of invalids it may be said that what is food to one is poison to another, and with them each case has a law to itself. With persons in ordinary health the results are more uniform, but, unfortunately, we know very little concerning the relative digestibility of foods. Experiment has, however, shown that nearly one-half of our daily food escapes complete digestion and assimilation. In the light of this fact the fruits occupy a very favourable position, the great majority of them showing a high proportion of soluble matters. This, in the more common fruits, ranges from two-thirds to five-sixths of the total solids, and gives them much more nutritive value than the figures indicate. This also partly explains the value to invalids of such fruits as Grapes and Straw-

berries, which contain relatively but a small proportion of insoluble matters. Since, then, fruits are highly nutritious, it is evident that they should be used as foods. From a false idea of their nature, they have too frequently been used as drinks, and taken at improper times. They have, in consequence, received a bad name, and anxious mothers warn their children against fruit; but let them take extract of beef or any other concentrated flesh food, and the same ailments begin to show themselves, and in forms more dangerous than ever followed the use of ripe fruit at equally unseasonable hours. Fruit should be used as part of a meal. With children and healthy adults, just before breakfast and dinner are the best times. Invalids will find it safer, especially with juicy fruits, to take it about the middle of the meal, other dishes preceding and succeeding it. This refers chiefly to uncooked fruit. When cooked and served hot, fruit may be safely taken at any period of the meal. Invalids will also generally find the more acid fruits less digestible, and especially so when preceded in the same meal by Potatoes. Fruits, especially when not quite ripe, are generally rendered more digestible by cooking. Stewing is the general, and a good method, but roasting is preferable. This may be done in an oven, or before an open fire. Cooked in this manner, fruit will generally be found to require little or no sugar, a decided advantage with invalids.

Unripe fruits should not be eaten, many of the acids found in the green fruits being poisonous. We do not know of any analysis of green fruits; but the following table shows the changes in Pears from ripeness to mellowness, and finally to decay:—

	Ripe and Fresh.	Kept till Mellow.	Kept till Brown.
Resinous colouring matter	0.03	0.01	0.04
Sugar	6.45	11.52	5.77
Gum	3.17	2.07	2.62
Lignine	3.83	2.19	1.55
Albumine	0.03	0.21	0.23
Metaplectic Acid	0.11	0.08	0.61
Lime	0.03	0.04	—
Water	86.28	83.93	62.72
	100.00	100.00	76.84

It will be noticed that as the Pear mellow the sugar increases in amount, chiefly at the expense of the gum and indigestible lignine. The rotting Pear again shows a decrease in all the more important constituents; the sugar has in part fermented, and gone off as carbonic acid and moisture, there being a loss in weight of about 23 per cent. A sour acid of decay, called metaplectic acid, has also been generated. Much more of interest might be added; but enough has been said to show that fruits should be accorded a higher value as wholesome foods than has usually been conceded to them. Those who are fond of fruit will be gratified to be assured that it is not only delicious to the palate, but rich in positive nutriment.—*Journal of Chemistry.*

Tomato Ketchup.—Tomato ketchup may be made in the following manner:—Scald ripe Tomatoes just enough to remove the skins, sprinkle with salt, and let them stand a day; strain through a sieve to remove the seeds; then to every two quarts add two ounces of Cloves and two of black pepper, two Nutmegs, a very little cayenne pepper, and salt if necessary; boil the liquor half an hour, let it cool and settle; add a pint of the best cider vinegar, and bottle tightly; keep in a cool place.

Curing and Packing Figs.—This is extremely simple. The Figs are exposed on wooden trays to the sun until sufficiently cured to pack safely. When the curing is completed they should have a somewhat transparent skin through which the seeds are visible, and the inside should appear dark and luscious. That sugar is sprinkled on them is a popular erroneous idea. Thinness of skin is the chief merit of a good Fig; the coarse rough scaly, thick-skinned specimens not being thought much of in market. But although the drying is a perfectly simple affair, there is that in the packing which makes or mars the Fig, and the figure of the packer's profit depends on how he sends them to market. Figs are no longer packed in drums, and the method of flattening them and packing them in layers and boxes has been carried to excess, and so often causes the Figs to split and lose their flavour and fragrance that it is discouraged. If Southern Figs, those especially of the most luscious flavour and with the thinnest skins, are carefully dried and packed neatly in small fancy boxes, holding one, two, or three pounds, and only packed so closely as to become compact and avoid bursting the fruit, it is quite probable that the home product would very soon become more highly appreciated than the Turkey Figs. At first there would be the popular prejudice against the home production, but, as in the case of many other things, this would soon wear away if real excellence were there to back up the claims of the native article to recognition.

MADDER.

THE following extract, from Dr. Russell's address before the British Association, will afford our readers some interesting particulars on this subject:—"I pass on now to the special subject to which I wish to ask your attention. It is the history of the vegetable colouring matter found in Madder: it has been in use from time immemorial, and is still one of the commonest and most important of dyes: it is obtained from a plant largely cultivated in many parts of the world for the sake of the colour it yields; and the special interest which now attaches to it is that the chemist has lately shown how this natural colouring matter can be made in the laboratory as well as in the fields—how, by using a by-product which formerly was without value, thousands of acres can be liberated for the cultivation of other crops, and the colouring matter which they formerly produced be cheaper and better prepared in the laboratory or in the manufactory. That a certain colouring matter could be obtained from the roots of the Rubia tinctorum and other species of the same plant has been so long known that apparently no record of its discovery remains. Pliny and Dioscorides evidently allude to it. The former, referring to its value as a dyeing material, says—'It is a plant little known, except to the sordid and avaricious; and this because of the large profits obtained from it, owing to its employment in dyeing wool and leather.' He further says—'The Madder of Italy is the most esteemed, and especially that grown in the neighbourhood of Rome, where and in other places it is produced in great abundance.' He further describes it as being grown among the Olive trees, or in fields devoted especially to its growth. The Madder of Ravenna, according to Dioscorides, was the most esteemed. Its cultivation in Italy has been continued till the present time, and in 1863 the Neapolitan provinces alone exported it to the value of more than a quarter of million sterling. At the present day we are all very familiar with this colouring matter as the commonest that is applied to calicoes: it is capable of yielding many colours, such as red, pink, purple, chocolate, and black. The plant which is the source of this colouring matter is nearly allied, botanically and in appearance, to the ordinary Galiums or bedstraws. It is a native probably of Southern Europe, as well as Asia. It is a perennial, with herbaceous stem, which dies down every year; its square-jointed stalk creeps along the ground to a considerable distance, and the stem and leaves are rough, with sharp prickles. The root, which is cylindrical, fleshy, and of a pale yellow colour, extends downwards to a considerable depth; it is from this root (which, when dried, is known as Madder) that the colouring matter is obtained. The plant is propagated from suckers or shoots; these require some two or three years to come to full maturity and yield the finest colours, although in France the crop is often gathered after only eighteen months' growth. From its taking so long to develop, it is evidently a crop not adapted to any ordinary series of rotation of crops. The plant thrives best in a warm climate, but has been grown in this country and in the north of Europe.

In India it has been grown from the earliest times, and, as before stated, has been abundantly cultivated in Italy certainly since the time of Pliny; he also mentions its cultivation in Galilee. In this country its culture has often been attempted, and has been carried on for a short time, but never with permanent success. The Madder now used in England is imported from France, Italy, Holland, South Germany, Turkey, and India. In 1857 the total amount imported into this country was 434,056 cwts., having an estimated value of £1,284,989; and the average annual amount imported during the last seventeen years is 310,042 cwts., while the amount imported last year (1872) was 283,274 cwts., valued at £922,244. In 1861 it was estimated that in the South Lancashire district alone 150 tons of Madder were used weekly, exclusive of that required for preparing garancin. I quote these figures as showing the magnitude of the industry that we are dealing with. Another point of much interest is the amount of land required for the cultivation of this plant: in England it was found that an acre yielded only from 10 to 20 cwts. of the dried roots, but in South Germany and in France the same amount of land yields about twice that quantity. The Madder cultivator digs up the roots in autumn, dries them, in some cases peels them by beating them with a flail, and exports them in the form of powder, whole root, or after treatment with sulphuric acid, when it is known as garancin. The quality of the root varies much; that from the Levant, and known as Turkey-root, is much valued. According, however, to the colour to be produced is the Madder from one source or another preferred. To obtain the colouring matter, which is but very slightly soluble in water, from these roots, they are mixed, after being ground, with water in the dye-vessel, and sometimes a little chalk is added. The fabric to be dyed is introduced, and the whole slowly heated; the colouring matter gradually passes from the root to the water, and thence to the mordanted fabric, giving to it a colour dependent on the nature of the mordant.

THE GARDEN IN THE HOUSE.

WINDOW GARDENING.

I OBSERVE that most writers on floriculture begin by informing their readers that no person need attempt a window garden (except it be Ivy and Ferns) unless they can have sunshine upon their plants some portion of the day; and, likewise, that the air from a furnace and the fumes from coal or gas, is death to plants. An ounce of experience is worth a pound of opinions; and with your permission I "rise to explain" my plan. While I admit the difficulties of window-gardening under all the above drawbacks, still I insist that a perfect bower of sweets can be made of a north window in a room heated by coal and lighted by gas; and that, too, with very little extra expense or trouble. Take, for instance, an old card-table, remove the top, line the inside with zinc, and have a faucet inserted underneath; saw a thin board so that it will nicely cover the table; in this board bore holes thickly with a small gimlet, adding an auger hole in the centre sufficiently large to admit the nozzle of a small funnel; place a thick covering of Wood Moss over the board; turn a kettleful of very warm water through the funnel into the zinc reservoir, and place your plants upon the Moss. By drawing off the water when it becomes cold, and replacing it with hot water every night and morning throughout the winter, your plants will thrive splendidly, and even without a gleam of sunshine, you can have many flowers during the months of snow and storm. The slow rising of the steam through the Moss underneath the pots, keeps the air around the plants humid, while the bottom-heat thus obtained gives rapid growth. Instead of a table I procured a "glazed window-garden," had it lined with zinc, and in this placed pots of double Geraniums, Abutilon, Begonia, Aucuba japonica, white Bouvardia, and various other plants, with several varieties of hardy bulbs. Above these, out of reach of the Ferns, are carved Walnut brackets, one supporting a white, the other a pink, Primrose; while still other side-brackets hold pots of English Ivy and Wax-plant. From the centre, depending from a strong hook, hangs a very large rustic basket. During the entire winter, this basket was a mass of bright colours. A large-leaved Fern occupied the centre, but was entirely surrounded by Hyacinths, Tulips, Crocus, and Narcissus, of every possible shade. After the flowering bulbs had faded, they were removed, and a Begonia Rex, Ivy, variegated Alyssum, variegated Balm, Ivy-leaved Geranium, Passiflora trifasciata, and Cobæa scandens, took the place of the bulbs, and so the basket remains a thing of beauty still. On each side of the window below the side-brackets, hang small Moss baskets, one containing a Maderia Vine, the other a Geranium; but the prettiest basket of all was made of wire, filled with Wood Moss and Crocus bulbs. Through this Moss, the purple and white blossoms looked forth like veiled brides, winning the admiration of all beholders. For my Ivy I have made a hanging-basket, trimmed with old-fashioned leather-work, and lined with zinc to prevent dripping. In this I set the earthen pot containing the plant, and thus obtain a handsome receptacle for my Ivy without endangering its life by planting it in a vessel with no drainage. There is no trouble with the green fly or red spider in my window; the moisture from the hot water is not relished by Mr. Spider, and I have learned, by several years' experience, that it is an excellent thing to utilise Paterfamilias's tobacco smoke to keep off the aphids. The cigar stumps are also excellent. I put them in the watering-pot, turn on cold water, set it on the stove until it is blood-warm, then thoroughly wet the earth around the plants with this tobacco-tea—the worms don't like it, but the plants do.—*Hearth and Home*.

Put Flowers on Your Table.—Set flowers on your table—a whole nosegay if you can get it, or but two or three, or a single flower, a Rose, a Pink, a Daisy. Bring a few Daisies or Buttercups from your last field work, and keep them alive in a little water; preserve but a bunch of Clover, or a handful of flowering Grass—one of the most elegant of nature's productions—and you have something on your table that reminds you of God's creation, and gives you a link with the poets that have done it most honour. Put a Rose, or a Lily, or a Violet on your table, and you and Lord Bacon have a custom in common, for this great and wise man was in the habit of having flowers in season set upon his table, we believe, morning, noon, and night—that is to say, at all meals, seeing that they were growing all day. Now here is a fashion that will last you for ever, if you please—never change with silks, and velvets, and silver forks, nor be dependent on caprice, or some fine gentleman or lady who have nothing but caprice and changes to give them importance and a sensation. Flowers on the morning table are especially suited to them. They look like the happy wakening of the creation; they bring the breath

of nature into your room; they seem the very representative and embodiment of the very smiles of your home, the graces of good morrow.—LEIGH HUNT.

FRANCOA RAMOSA AS A WINDOW PLANT.

FRANCOAS, though rarely seen in cultivation, are, nevertheless, well worth attention, either as plants for the greenhouse, cool conservatory, or even for flowering in the open border during the late autumnal months. As window plants they flower from September up to Christmas, and, when well grown, are very ornamental, producing as they do tall spikes of pinkish-white flowers in great profusion. Their foliage is large,



Flower-spike of *Francoa ramosa*.

irregularly pinnate, and thickly set with white hairs. The flower-spikes, which are erect, are generally branched, and vary from a foot to nearly a yard in length, and are very handy for cutting when other flowers are scarce. When wanted for window-decoration they should be grown in sandy-loam and leaf-mould, taking care not to over-pot them, or they are apt to produce leaves instead of flowers. Grown on a shelf near the glass in a cool house, or fully exposed in a cold frame or turf pit outside, they make sturdy little plants and flower freely. They are easily propagated by means of cuttings put in in the spring. Our illustration shows a portion of the flower-spike, natural size. This plant has recently been flowering very freely, planted out on the rockwork at Kew.

F. W.

PEARS OF THE SEASON.

THE following are in good condition with me this season and are well worthy of notice viz:—

Abbe de Beaumont.—This is a smallish Pear, not unlike the Hazel, and of excellent quality. It was raised by M. Leroy, of Angers, and fruited with him for the first time in 1864. I introduced it in 1870. It is obtuse-turbinate in shape with a greenish-yellow skin, marbled and dotted with fawn, especially round the stem. The flesh is white and melting, and deliciously sweet and acidulated. The tree is an abundant bearer and does well on the Quince.

Alphonse Karr.—This nicely perfumed Pear kept with me in 1870 until December 16th. My specimens this year are small and more turbinate than they were in that year. It is a good Pear and useful, but not first-rate.

Amelie le Clerc.—This delicious Pear was raised by M. Le Clerc of Laval, the raiser of that finest of all Pears, Van Mons Leon Le Clerc, but it did not fruit till after his death. It does well on the Quince, and was fruited for the first time in 1850, but not sent out until eleven years afterwards. I imported it in 1862.

Ange (d').—This is one of the oldest and often one of the best of Pears. It adds to other good qualities that of being an abundant bearer and one of the best for preserves. M. Decaisne thinks it identical with the Pear called in Italy Pera Morota.

Belle et Bonne.—This is an enormous and constant bearer, especially upon the Quince; it rarely misses having a crop. I have before me specimens of it from a tree forty years old, grafted upon the Quince 4 feet above the ground. I have had the tree twenty-three years, and it was quite that age when I got it, and it does not seem to feel its weight of years or the weight of fruit either, although this last makes it bend to the ground; in fact, it is literally a fountain of Pears.

Belle de Flushing.—This is a small and beautiful little Pear when fully exposed to the sun. It requires to be gathered a week or ten days before getting ripe, for if left upon the tree too long it gets mealy and loses its rich flavour. The tree is an abundant bearer as a pyramid. It is of American origin, where it is called Harvard, a name which ought to be retained.

Bergamot (i.e., Bergamotte d'Automne of the French, and it has many other synonyms).—The origin of this variety has been disputed, but I think it originated in the East and was introduced through the Romans into Europe. It is too well known to need description.

Bergamotte Lucrative (Fondante d'Automne).—This is one of the best and most delicious of Pears when grown as a pyramid on the Quince; on a wall it becomes very large, but loses its rich flavour. Thus cultivated it is not so fine on the Pear as on the Quince.

Bergamotte Hollande.—This is a nice delicately-perfumed small Pear, of very old date, and, as a matter of course, it has been honoured with at least eight or ten synonyms. It does not do well upon the Quince, but it succeeds on the Pear stock, and better still if double worked.

Bergamotte Reinette.—This is a seedling of M. Boisbunel, and fruited first about 1857. It is an enormous bearer, and a very handsome fruit. It grows exceedingly well upon the Quince. I received it under the above name, which is its true one. I have also had it under the name of Souvenir du Congrès Pomologique, but the last is quite a different thing.

Berryais (le).—This is an excellent good-sized Pear, of a bluntly turbinate or short pyriform shape, with a citron-yellow skin, dotted with greyish russet. The flesh is white and melting, and furnished with an abundance of acidulated and delicate juice, having a pleasant aroma. It does well upon the Quince, on which it makes fine pyramids. It was raised by M. Boisbunel, of Rouen, in 1861, and sent out in 1863. As yet, however, it is little known in England, but it deserves to be largely cultivated.

Beurre d'Amanlis.—This, like all our finest fruit, has had to bear many names. It is a noble fruit, which attains here, on a dwarf standard, the weight of three-quarters of a pound. As the merits of this fine early autumn Pear are so well known I need not enlarge upon them. Its origin has been attributed to M. Van Mons, but M. E. Fornay, of the Garden of Plants at Paris, has pointed out the incorrectness of the above parentage, and says that it originated at Amanlis, a village near Rennes, in France. The tree, being of a pendent habit, should be worked on a stem about 4 feet in height, and should be allowed to take its natural drooping character. When permitted to grow as it will, it runs much less danger of getting its heavy fruit blown off, as the long flexible branches wave to and fro, and so the force of the wind gets broken. If trained as a pyramid the wind gets a full sweep of the large fruits, and down they come.

Beurre Goubalt.—This is quite different from Précoce Goubalt.

The tree is a low grower, and a most abundant and regular bearer, hardly ever missing a crop. It does middling on the Quince, but, being a moderate and dwarf grower, it does not require it.

Beurre Hammecker.—This is one of our most beautiful and prolific Pears. It is often finely tinted and striped on the sunny side with vermillion. It is very variable in flavour; sometimes it is first-rate, and at other times it is only a sweet juicy fruit without any flavour.

Beurre Kennes.—This is a most abundant bearer, but does not do well on the Quince, and the fruits are very variable in shape, being, as a rule, short and pyriform. The skin is vermillion, covered with russet, and the flesh is white, melting, juicy, and aromatic. It is a seedling raised by Van Mons, but it did not fruit until two years after his death.

Brun (Le).—This fine new Pear was raised at Troyes by M. Gueniot, and fruited for the first time in 1862. I introduced it in 1865, and in 1867 it fruited with me, and was truly delicious in the end of September. This year it is not as yet quite ripe. It grows well upon the Quince, and bears heavy crops, which are firmly attached to the tree, and do not easily blow off. I can highly recommend it.

Calebasse d'Eté.—This is a wonderful bearer and excellent Pear, of first-class quality. It does not succeed on the Quince unless double worked.

Comtesse d'Alost.—This is a good Pear, but little known in England; it grows freely, and bears abundantly upon the Quince.

Delices de Jodoigne.—This is one of our best and most prolific Pears on the Quince. There seem to be two varieties of it, one having fleshy stalks, and otherwise a little different from the other. The tree, too, has all the leaves of a beautiful claret and vermillion colour, whilst the other sort has all its leaves green. As to growth, &c., these two trees are identical.

Esperen.—This is a fine Pear, which ripens in September and October, and one that grows and bears freely upon the Quince. It was raised by Van Mons in 1823, and is of a pyriform and irregular shape, with a clear greyish-yellow skin, dotted and traced with greenish-grey, and clouded with fawn or pale rose on the sunny side. The eye is large and open, and the flesh white, half melting, with abundance of sugary perfumed juice. It is well figured and described by Professor Decaisne in his beautiful work called "Jardin Fruitier," and is well worthy of cultivation.

Flemish Beauty, or Fondante des Bois.—This fine Pear is too well known to need description, but I take this opportunity of recommending those who grow it to always gather it a week or more before it gets ripe, and to put it away in a cool airy place to ripen off. By so doing the flavour will be much improved, and it will keep some time longer than if ripened on the tree.

Merriott, Crewkerne, Somerset.

JOHN SCOTT.

WORK FOR THE WEEK.

THE KITCHEN GARDEN.

Now that summer crops are mostly removed from the ground, no time should be lost in manuring all empty quarters, and in trenching and ridging them. The hoe should be kept at work during this month amongst growing crops, useless trees and perennials should be discarded, and provision should be made for supplying their place with young ones.

Asparagus.—As soon as the stalks have completed their growth, and have begun to turn yellow, remove them, tie them into bundles, which should be kept erect and quite dry, and which will be found extremely useful for protecting plants, seed-beds, and frames from frost in winter. When the beds are thus cut over, clean them, and fork the surface into the alleys, and replace it by a good dressing of decayed manure, over which again place the soil just removed, which should be left in as rough a condition as possible, so as to be beneficially influenced by the weather. If necessary, the seeds may be sown, as soon as they are ripe, in rows about 12 or 18 inches apart, in a light, rich, and sandy soil. Early in spring, however, is considered the best time for this operation. In selecting the berries, take the largest and finest, and those of the brightest red colour; and, after being gathered for a week or two, wash out the seeds, then dry them, and store them away in brown-paper bags, drawers, or other convenient places, till sowing time. If the seeds are to be kept more than one year, or are to be sent abroad, the best method is to dry the berries, and to leave them in that condition until the seeds are required, when, by rubbing them between the hands, in which is held some sand, they will separate readily. The spent or exhausted plantations may now be broken up, and all the good roots retained for forcing, while weak and inferior ones should be discarded. The ground should then be heavily manured with cow or pig dung, or ordinary farm yard manure, if possible, deeply trenched and

ridged, and this will form an excellent situation for early spring Cauliflowers. In forcing Asparagus, which generally begins about the middle of this month, make a slight hot-bed—one that will be likely to maintain a temperature of 60° or 65°—of leaves, or leaves and stable litter mixed, and over it put a 3 or 4 inch deep layer of decayed leaf-soil, old potting-mould, or other light earth, and in this place the roots rather thickly. Cover the crowns, somewhat lightly at first, with the same substance, but, after the shoots begin to grow, add a little more. The warmth may be regulated by covering the sashes, more or less, with litter, and, by putting linings of the same around the frames, in case of a decrease of temperature. When the "grass" begins to grow, light must be admitted daily by uncovering the sashes, and a little ventilation, in favourable weather, greatly improves the quality of the heads. Where there is an insufficiency of old roots for forcing, use three-year old ones, which are best, and be very careful in lifting them, as they are very susceptible of injury. These directions are applicable all through the forcing season.

Balm.—It is sometimes necessary, for convenience sake, to replant Balm at this season whilst the operation of digging and trenching is being pursued; therefore choose for it a light warm soil and a sheltered situation. Divide the roots at planting time, and insert them in rows about a foot apart each way. Cut down the stems of old plants as soon as frost sets in.

Broad Beans.—Preserve the haulm of Beans for protecting purposes, and in no case should it now be permitted to encumber the ground. Quarters lately occupied by Beans should be well manured, trenched, and ridged through the winter, and cropped with some of the Cabbage tribe, Spinach, Asparagus, or Seakale, in spring. For a very early crop of Beans, sow some seeds of the Early Mazagan or Early Dwarf Prolific about the end of the month, in a warm border that has been deeply worked, but unless rather poor, it should not be manured for this crop. Lime, marl, wood-ashes, and such inorganic manures, are of material importance to the Bean crop; and, indeed, if the ground to be cropped in the spring can be decided on now, and any insufficiency in these manures supplied, it will be of greater importance than if applied when the Beans are sown, for lime requires to be in the ground some time, and if applied in autumn, its benefit on a spring-sown crop soon becomes apparent.

Beet, Parsnips, Carrots, &c.—Towards the end of the month cut over the leaves of Beet to within 2 inches of their base a few days before the roots are to be lifted. A good mode of lifting them is to cast out a trench alongside the rows, as deep as the roots, and to separate the soil carefully from them. Do not, however, lift many of the roots this month, as they preserve their flavour much better in the soil than out of it, and in the case of frost a mulching of any protecting material may be employed to keep it out of the ground. Parsnips continue growing till November, therefore it would be waste to lift them now; indeed, if at all practicable, they should never be lifted and stored, but just left where they are growing and lifted as required for use. When they begin to grow, however, in February, they must all be lifted. About the end of the month Carrot-lifting may begin. They should be loosened by means of an iron-pronged fork and drawn up by the leaves. They ought then to be dressed by cutting the leaves quite close to the flesh, and, indeed, if a bit of the green top too be cut off, it will prevent the Carrots from sprouting in spring, and will not impair their keeping properties. Salsafy and Scorzonera roots will now be in good using condition, but they should not be lifted for storing until frosty weather necessitates such. Skirret, too, will be fit for use, but it should never be lifted and stored if it is possible to get a continuous supply of it throughout the winter from the open ground. In storing Carrots, Beet, or Parsnips, they should be placed in a very cool shed or cellar, in a heap, but not so great as to cause fermentation. The crop end of the roots should be outermost, and some moderately dry soil or sand mixed amongst them. A covering of straw, dried Ferns, Asparagus shoots, &c., may be used if frost is likely to get at them.

Cabbage, Cauliflower, Broccoli, &c.—Finish, if possible, the planting out of Cabbages for spring use, by filling all available spaces with plants to remain for hearting or for pulling for Coleworts. What plants remain prick out pretty thickly into rows in borders or between fruit-bushes, as they will come in very useful for filling up empty spaces throughout the winter and early spring. Gather Brussels Sprouts as they are ready, and trench the ground they occupy as soon as it is empty. Transplant the remainder of the Buda Kale for late spring use. Broccoli, both white and purple, will now be coming into use, but, as the Cauliflower will be more in demand than it, our attention must be directed to the protecting and preserving of late Broccoli crops, and this is the proper month to see to such. The easiest way is to lift the plants with good balls of roots attached, and place them thickly in rows with their heads

inclined towards the north. Break a leaf over Cauliflower heads as they begin to form, for at this season the atmosphere is apt to discolour them and frost to destroy them, but when covered by the broken leaf they are much less susceptible of injury. If Cauliflowers were sown out of doors in the end of August in cold localities, and in September in more favourable districts, they must be kept thin and clean, and wood-ashes and lime occasionally dusted amongst them. Towards the end of this month, or before frost is likely to set in, prepare cold frames and trample the soil firmly in the bottom of them to within 10 inches or 12 inches of the glass; over this firm base place a 4 inch or 6 inch layer of light soil, into which prick the plants about 3 inches or 4 inches apart each way. When plants are strong and fleshy they are liable to "button" in spring, but on the other hand, if they are weakly they do not stand a severe winter without suffering considerably. Some excellent gardeners make it a practice to sow their Cauliflowers in the first week of October in frames, under which is a layer of a foot or so of leaves, with good results. They require abundant ventilation, occasional dredgings of wood-ashes or dry soil or dust, and protecting with mats or litter in the case of hard frosts.

Celery and Cardoons.—Celery should be earthed up as is needed, choosing dry weather for doing it, and remove any suckers that can be discerned about the plants. Band and earth up Cardoons in dry weather.

Endive.—Frequently stir the ground about the Endive, and dust it over with lime to prevent the inroad of slugs. As the plants become large enough for blanching, tie them up with matting, or place over them inverted pots, slates, tiles, thin boards, or pieces of matting, or they may be lifted and planted in dry soil in a cellar, or covered pit or frame. Before the approach of severe weather some good-sized plants should be selected and planted in frames. Transplant the Curled and Batavian kinds on dry banks for spring use, and protect them from keen frosts with rank litter.

Globe Artichokes.—Cut over old fruit-bearing stalks close to the crowns, and remove the weakest of the shoots so as to strengthen those that are left, in order to cause them to stand the winter better, and be more easily protected. From plantations made last spring some heads may be obtained at this time; and, if they are required for pickling, they should be cut when they are about 2 inches in diameter. If severe or unsettled weather set in, cut over all remaining flower-stalks having heads on them, plant the stalks in damp sand in a cellar or shed, and cut off the decaying portion of the stalk every three or four days.

Lettuces.—Sow White and Green Paris Cos Lettuces in frames for transplanting next spring. The Green Cos is an excellent sort for spring growing, but not so good for summer work as the White Cos. The frames in which these should now be sown ought to be shallow, facing the south, and filled, almost to the brim, with light soil. Level it, and press it with the back of a spade or board, sow the seeds, and sift over the whole some fine soil. A good store of dry wood-ashes, dry dust, and sand should be under cover for dredging amongst the plants in winter, for nothing is more prejudicial to them than wet. If the sashes be not waterproof, whole patches will probably damp off under the drip, therefore have frames and sashes in good order. Plant out the hardy sorts of Cos and Cabbage Lettuces, and plant some in a frame, for use in case of an emergency.

Mustard and Cress.—These may be sown in warm borders until the middle of the month, but after that time it is better to sow indoors in boxes, or borders in fruit houses.

Onions, Garlic, and Chives.—In wet weather look over stored Onions, and pick out all that are beginning to spoil. Thin and clean young crops. Lift old plants of Chives, and divide them, and plant the divisions about 9 inches apart in rows a foot asunder, or use them as edgings to some quarters of the kitchen garden. Separate the cloves of Garlic and Shallots, and plant a few for early use about 6 inches apart in rows a foot from each other, in a light rich and rather dry soil and a sheltered place.

Parsley.—Towards the end of the present month the summer Parsley leaves will begin to decay; therefore provision should be made for a winter supply. Some roots should be lifted and planted thickly in frames or out of doors, where they can be conveniently covered.

Potatoes.—All Potatoes should now be lifted in fine weather, if this is not already done, and after being cleared of all diseased ones, built into little ridges, which should be covered, and, after a time, turned and examined for diseased tubers, and finally built into larger ridges, and covered so as just to exclude the wind, rain, and frost. Air tiles should be placed in the pits some feet apart, and should be stopped with hay or straw. If stored indoors in sheds or cellars, they must be cool and dry, and not in too great a heap. The seed Potatoes should be kept dry and airy on the floors or shelves of sheds or lofts.

Radishes.—Sow these in pits or frames, and a sprinkling of

seed over the soil in frames where French Beans and Potatoes are grown, comes in very useful. A sowing may also be made on a warm border out of doors, but it must be protected with litter in frosty weather.

Seakale.—Clear away the decayed leaves of these, and protect the crowns with leaves or litter. Lift some of the strongest for forcing, which may be conveniently done in the Mushroom house or any dark partitioned-off part of a forcing house. Gently heated frames may also be employed for the same purpose.

Tomatoes.—Any fruits still on the plants and unripe may be assisted in ripening by keeping the sashes in front of them, or pulling them and laying them in frames near the glass or inside greenhouses. Perhaps the most effectual method at this late season would be to cut off the bunches of fruit with pieces of the wood adjoining, and hang them up before the sun inside bright and clean glasshouses. In order to secure good, healthy, stocky, and quick-fruited plants for next year, propagate a few cuttings now, and treat them rather hardly during the winter.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY,

OCTOBER 1ST.

Fungi, for which prizes were offered both for edible and poisonous collections, formed the most prominent feature of this meeting; but, in addition to these, Roses, herbaceous plants, and fruits were also contributed.

Fungi.—Of these several collections were furnished in competition for the prizes offered by Mr. Wilson Saunders. Mr. J. English, of Epping, was first, and Mr. B. J. Austin, 6, Russel Street, Reading, second. Conspicuous amongst Mr. English's varieties that were fit for food were *Fistulina hepatica*, *Hydnum repandum*, *Lepiota procera*, *Amanita rubescens*, *Boletus scaber*, *Hygrophorus virgineus*, *Coprinus comatus*, *Lactarius deliciosus*, *Clitopilus prunulus*, *Russula alutacea*, *Psalliota campestris*, and *Marasmius oreades*. Amongst poisonous sorts in the same group were *Lactarius controversus*, *Leutinus cœchleatus*, *Polyporus imbricatus* (very rare), *Peziza aprantia*, *Pholiota pudica* (rare), *Lactarius vellereus*, *Clavaria fusiformis*, *Pholiota spectabilis*, *Polyporus rufescens*, *P. sulfureus*, *Amanita muscarius*, *Flammula alnicolor*, *Clitocybe odor*, and others. Mr. English also showed a tasteful window or mantel-piece ornament composed of a group of dried Fungi suitable for placing under a shade. In the class of a collection of edible Fungi, Mr. W. G. Smith was first with an extensive group; Miss L. E. Hubbard, Leonardslee, Horsham, second; and Mr. J. Austin third. Part of the gigantic Fungus from the Bank of England was exhibited, and Mr. Woodbridge, Syon House, Mr. Earley, Valentines, and Mr. Keith, Forres, also contributed good specimens of some rare kinds.

Roses.—From Messrs. Paul & Son, Cheshunt, came a very large group of cut blooms of Roses, remarkable for fine form, size, and brightness of colour. Amongst dark-red varieties were Joseph Fiala, Maurice Bernardin, Vicomte Vigier, Madame Victor Verdier, Comtesse d'Oxford, Gloire de Santenay, Ferdinand de Lesseps, Duke of Edinburgh, Pierre Notting, Paul Neron, Annie Wood, Charles Lefebvre, and Duke of Wellington; of pink and paler colours were Cheshunt Hybrid (fine), Marquis de Castellane, Elie Morel, La France, Abel Grand, Duchess of Orleans, Madame A. de Rougemont, Souvenir d'un Ami, La Fontaine, Belle Lyonnaise, Souvenir d'Elise, Boule de Neige, and others. Mr. Wm. Paul, of Waltham Cross, also showed a large collection of extremely fine blooms of Roses, amongst which Etienne Levet, Mdlle. Annie Wood, La France, Madame C. Crapet, Maréchal Vaillant, Dr. Andry, Dupuy-Jamain, Duke of Edinburgh, and Celine Forestier were very fine.

Table Plants.—Mr. J. W. Wimsett, Ashburnham Park, showed some extremely pretty little plants suitable for table decoration. They comprised *Dæmonorops fissus*, *Kentia australis*, *Rhapis flabelliformis*, *Cocos Weddelliana*, *Areca Baueri*, *A. purpurescens*, *lutescens*, *Latana aurea*, *Thrinax elegans*, *Dracæna Cooperi terminalis*, *nigro-rubra*, and *gracilis*, *Pandanus Veitchii*, and *P. Javanicus variegatus*, *Aralia Veitchii*, *Croton Weismanni*, and *Cucurigo recurvata striata*.

Miscellaneous.—From Messrs E. G. Henderson & Son, St. John's Wood, came hybrid *Begonia Prince of Wales*, with large brilliant carmine flowers; and B. Dr. Kellog with the same shaped blooms, but not of such an intense colour; also several varieties of the Golden Variegated Thyme. A green double-flowered *Dahlia* was shown by Mons. Sieckmann, of Germany. Any one acquainted with *Rosa monstrosa* can form some idea of the appearance of this variety, which, by the way, is no particular novelty. From Mr. Wm. Bull came a very effective dark-crimson-leaved variety of *Ricinus* called *refulgens*; and Mr. Coulter sent a plant of *Eucharis amazonica*, beautifully bloomed. A plant of *Cœlogyne cristata*, with green and white variegated leaves, was shown by P. Crowley, Esq., Waddon House, Croydon; and *Dahlia* flowers were supplied by Mr. Harris, Orpington, and Mr. Rawlings, Romford. From the society's gardens at Chiswick came a fine plant of *Lomaria gibba* Belli, and a specimen of *Lady Middleton Pelargonium*, bearing rose and scarlet flowers.

Hardy Herbaceous Plants.—Of these a group was furnished by

Mr. R. Parker, of Tooting. They consisted of an immense specimen of *Aster discolor major*, covered with its Daisy-like flowers; *A. Amellus*, in fine condition; a vigorous plant of *Clerodendron Bungeanum*, in flower; the *Tritoma grandis*, or "fiery poker," with tall spikes of red flowers; and *T. Uaria glaucescens*, with many flower spikes, varying from 2 to 3 feet high. There were also specimens of *Rudbeckia Newmanni*, *Verbena venosa*, cut blooms of *Phlox Lady Sinclair*, *Delphinium M. le Bihan*, Prince of Wales, and Nahamah, *Physostegia imbricata*, *Helianthus multiflorus majus*, *Aster laevis*, *Pyrethrum serotinum*, and several varieties of the double-flowered sorts. This collection also contained several specimens of *Colchicum*, including the true *Colchicum autumnale*, *a. pallidum*, *a. album*, *byzantinum*, *b. maximum*, and *variegatum*.

Fruit.—Collections of fruit were not so numerous as might have been expected. For a collection of black Grapes Mr. T. Bannerman, Blithfield, Rugeley, Stafford, was first with Gros Colman, Black Hamburgh, Gullet's Hamburgh, Lady Downes, Mrs. Pince, West's St. Peters', Champion Hamburgh, Black Teneriffe, Madresfield Court, Barbarossa, and Alicante. For a collection of white Grapes Mr. Wattam, Shendish, Hemel Hempstead, was first with Foster's Seedling, Duchess of Buccleuch, Muscat of Alexandria, Bowwood Muscat, Royal Vineyard, and Buckland Sweetwater. The best single bunch of black Grapes was also contributed by Mr. Wattam, who showed a large, well-finished, and very densely bloomed cluster of Alicante; Mr. Woodbridge was second with Madresfield Court. For the best bunch of white Grapes, Mr. Woodbridge was first with a very fine bunch of Muscat of Alexandria; and Mr. Wattam second with the same sort. Mr. W. Sweeting, of Sneyd Park, Bristol, showed three bunches of fruit from a seedling Vine, the fruit of which is oval and black, and good in flavour. One cluster was from a Vine grown upon its own roots; the other two were cut from Vines that had been grafted. This Grape is a late keeper, and consequently likely to be an acquisition. Mr. Wm. Paul showed Waltham Cross, a handsome white Grape, and also another large white sort called Winter Muscadine. Two promising varieties of white seedling Grapes were exhibited by Mr. Pearson of Chilwell; and Mr. Bland, of Gordon House, Isleworth, showed some wonderfully fine examples of Black Hamburgh. Of Apples and Pears a collection was exhibited by Mr. Dancer, of Little Sutton. It contained fruit of such size and beauty as to be the admiration of everyone. The Committee recommended that the Lindley medal be awarded for this collection. Mr. Dancer also showed wonderfully fine dishes of Sendal's and Belle de Septembre Plums. Mr. J. Perkins, Thornham Hall, Suffolk, showed a very large-fruited yellow Tomato, remarkable for the number of fruit in the clusters, each of which contained six or seven immense fruits. Mr. W. Cole, Ealing, showed a dish of fine fruits of Hathaway's Excelsior Tomatoes; and Mr. Coulter, Hayden Hall, Eastcott, sent a dish of the large-fruited sort. Mr. Turner, of Slough, showed some very fine white Spanish Onions; and Mr. Dancer ripe and young fruits of very large forms of Vegetable Marrows—one a yellow-coloured; and the other green, striped with yellow. A collection of fine Pears and Apples were exhibited by Mr. T. Sadler, Wandsworth Lodge, Tooting, who also showed some Red-skinned Flour-ball Potatoes. A dish of very fine Emperor Apples and four dishes of Plums were shown by Mr. Early; and two dishes of Plums and one of Pears by Mr. Jacks, Battle Abbey, Sussex. Mr. J. Scott, Bridgen Hall, Enfield, furnished dishes of King of Pippin Apples, Impératrice, and Coe's Golden Drop Plums, Black Hamburgh Grapes, Figs, and Walburton Admirable Peaches. Messrs. Stuart and Mein, Kelso, exhibited a large collection of garden Turnips; and Messrs. Veitch, of Chelsea, a group of ornamental and useful culinary Beets.

First-class Certificates.—These were awarded to the following:—

Thyme Golden Fleece (E. G. Henderson), the most yellow of all this class, very pretty and effective as a bedding plant.
Cattleya speciosa var. *Bassetti* (Baines), a pretty and apparently free-flowering variety.

Pourretia achupulla (Williams), a strong growing Bromeliaceous plant, with long arched spiny leaves, the ends of nearly all of which are of a vivid crimson, a colour which is also blotched irregularly over them.

Apple, Barchard's Seedling (Dancer), a very fine Apple, large and handsome, and the tree does well as a standard.

EXHIBITION OF APPLIANCES FOR THE ECONOMIC CONSUMPTION OF FUEL.

WHILE coals remain so dear, it may be interesting to know that the Manchester Society for the Promotion of Scientific Industry is endeavouring to take means to prevent waste consumption. The Council of this Society have resolved that an exhibition shall be held in Manchester of all appliances and apparatus that tend to the economic use and saving of fuel, for the purpose of inducing attention to, and eliciting opinions of practical men on the matter, and of giving all consumers of coal an opportunity of comparing the various appliances, with a view to their adoption of that which will best serve their purposes. The exhibition will comprise:—1. Appliances which may be adapted to existing furnaces, &c., whereby an actual saving is effected in the consumption of fuel. 2. Appliances which may be adapted to existing furnaces, &c., whereby waste heat is utilised. 3. New steam generators and furnaces, boilers and engines specially adapted for the saving of fuel and appliances, whereby waste products are utilised, and the radiation of heat prevented, &c. The exhibition will include appliances used for manufacturing, agricultural, and domestic purposes. Either the apparatus itself, or diagrams, or models may be exhibited, and no limit is

placed upon the class of article to be exhibited. Exhibitors will be required to deliver their exhibits free of charge at the place of exhibition, and to remove them at the close of the exhibition. They must also erect them, if necessary, at their own expense. Every exhibit must be accompanied by a full description, which must include a statement of the particular work the apparatus is intended to perform. A duplicate of this statement must be handed in when application is made to exhibit. Exhibitors will be given every opportunity of explaining the speciality of their apparatus.

Further information may be obtained from the secretary of the society, 11, Manchester Chambers, Manchester.

THE AMERICAN NATIONAL FRUIT CONGRESS.

THIS great re-union took place in Boston on the 10th, 11th, and 12th of last month, and in connection with it was an exhibition of fruits, which was national in its character. The occasion had been long looked forward to with deep interest, and many heads and hands were busy for months together in preparing for the festival. The reality surpassed its fairest promise. The attendance was not only more numerous than at any previous session, but the proceedings were such as to mark a new era in the history and usefulness of the association. These biennial sessions are, in reality, a national congress of fruit-growers, at which the relative merits of the different varieties in the various States are discussed, and their scale of value noted in the society's catalogue. This volume, containing, as it does, the experience of the best practical pomologists in the whole country, is of immense value to all fruit-growers, and is recognized as standard authority all over the world. At this meeting, we learn from the *New York Tribune*, in addition to the members of the society, delegates were present, numbering nearly 300. Massachusetts sent seventy-seven; New York, forty-one; Pennsylvania, fifty; Rhode Island, fifteen; Connecticut, fifty; Canada, four; Maine, ten; California, one; Virginia, fourteen; Georgia, eight; Louisiana, four; Nebraska, five; Nova Scotia, eleven; Minnesota, one; New Hampshire, three; New Jersey, nine; Ohio, three; Indiana, two; Illinois, four; Iowa, three; Kansas, three; Missouri, one; Tennessee, one; Washington, D.C., two.

The Show of Fruit.—Although the severe drought in the east and too much rain in the west and south, have made the fruit crop in many States almost an entire failure, the exhibition was magnificent, and the large capacity of Horticultural Hall was taxed to the utmost. Among the most noticeable collections was one of over 400 varieties of Pears, exhibited by the Hon. Marshall P. Wilder. Large and beautiful collections of Pears were also exhibited by the Cambridge Horticultural Society and by Messrs. Ellwanger Barry. The collection of the Ontario (Canada) Fruit Growers' Association contained fifty varieties of Plums, some of them very fine. Much attention was attracted by the fruits from Utah. They seemed to have been roughly handled in transit, and were not as well preserved as some other collections, but enough could be seen to show that most of them must have been beautiful specimens when they left their distant home. California's contribution contained magnificent fruit, the Grapes in particular forming a prominent feature of the show. The collection of Seedling Grapes exhibited by Captain Moore, of Concord, deserves special mention, and some of his seedlings seem to be very promising. A whole car-load of fine and varied specimens from Nebraska was brought under the personal charge of a party headed by the Governor of the State. Large contributions also flowed in from Kansas, Missouri, Nova Scotia, and from a number of Southern States, including Virginia, Georgia, and Florida. The fruits from the West and from the British Provinces naturally excited the most interest, and were the most surprising from the considerable size, perfection of development, and freedom from the worm and other pests which distinguished them over the productions of older sections of the country.

Premiums.—Of these some of the more important are the following:—*Apples*: First premium for State collection, to Nebraska; second for same, to Kansas; individual collection, first premium to John W. Ross, of Perryburg, O.; no competition for the second premium.—*Pears*: State or society collection, first premium, Cambridge Horticultural Society of Massachusetts; second, Connecticut Horticultural Society; individual collection, first premium to Ellwanger & Barry; second, Hovey & Co.—*Grapes*: State or society collection, first premium, Ontario Fruit Growers' Association; second, South Haven Pomological Society of Michigan; individual collection, first premium, J. H. Ricketts, Newburg, N. Y.; second, Hoag & Clark, Lockport, N. Y. For best collection of Grapes grown west of the Rocky Mountains, first premium, James Rutton, Floren, Cal.; best collection grown under glass, first premium, George B. Durfee, Fall River, Mass.—*Peaches*: State or society collection, first premium, Central Delaware Fruit Growers' Association; second, Ontario Fruit Growers' Association, Canada; individual collection, first premium, David F. Myers, Delaware.—*Plums*: State or society collection, first premium, Ontario Fruit Growers' Association; second, Deseret Agricultural Association of Utah; individual, first premium, C. H. Greenman, Milton, Wis.; second, G. P. Pepper, Pewaukee, Wis.

The President's Address.—The sessions of the Convention began on Wednesday, the visiting society having first been formally welcomed by the city and their especial host. In the afternoon of the same day, the Hon. Marshall P. Wilder, of Boston, President of the Society, a position which he has filled with grace and especial fitness from its foundation, delivered his annual address. In the course of this address, he gave an interesting historical sketch of the formation of the

American Pomological Society, reviewed the progress made during its quarter of a century of existence, and prophesied a still greater future for American pomology. He enforced the duty of constant effort to improve our native varieties of fruits and to produce new varieties; and speaking of our gradually increasing independence of foreign importation to obtain the best fruits, said:—"Of the forty-three kinds of Plums in our catalogue more than half are American. Of fifty-eight kinds of Peaches more than two-thirds are American, and, in fact, very few others are much in cultivation. Of the nineteen kinds of Strawberries all but three are American. Of thirty-one varieties of hardy Grapes all are American. Thus, of these fruits, we have in our catalogue at the present time 151 varieties, and, with the exception of thirty-seven, all are of American origin. The catalogue of the society was said to be the first attempt in this country to suppress by common consent our inferior fruits from cultivation, and to define the adaptation and value of approved varieties to a wide-spread territory. It is the result of the most patient investigation by its originator, Mr. Barry, from its first preparation in 1860 down to the present time. At the time of its first publication it was issued in octavo form, but in less than ten years it was necessary to enlarge it to quarto form, so as to admit of additional columns for the new states and territories coming within our jurisdiction. Instead of the fifty-four varieties of fruit recommended in 1848, it now contains the names of 577 kinds, and, with the list of 625 rejected varieties passed over by the society, makes a total of 1,202 on which the society has set its seal of approval or rejection. An important part of this work, not shown by these figures, is the reduction of the list as compared with former catalogues, by striking out varieties too good to be placed in the rejected list, yet superseded by better sorts. In Pears alone this reduction has been from 122 to ninety-one kinds. It has always been the aim to condense the list into as small a number of varieties as possible. An important step taken by the society was to place its mark of condemnation on the long list of unworthy fruits which were previously in its collections, thereby saving to cultivators a vast amount of time, trouble, and expense in the propagation of useless varieties. The remaining sessions of the society were taken up with discussions in regard to the introduction of different varieties of fruit into the catalogue and the rejection of others, and with other routine business. The most important resolutions passed were to abolish the "starring" of varieties at the meetings of the society. Hereafter the question of merit will be discussed only, and from the information thus gained the committee will determine the position of each variety. It was also decided that no money-premiums shall be offered by the society, and that hereafter awards for meritorious objects shall consist of the new Wilder Medal. Chicago was chosen as the place for the next biennial meeting, and it was decided to hold an extra meeting in connection with the Centennial at Philadelphia in 1876.

Cowan's Lime-kiln Heating.—I have only seen the working of this system of heating once, and that at Manchester, but I never saw anything in its way so satisfactory. The heating power, coupled with the slight trouble given to those who attend to it, is marvellous, and where limestone can be had, this system must be very economical. I may, however, add that the arrangement of the pipes was by no means good, as far as display regarding the qualities of the apparatus was concerned.—ALEX. MCKENZIE, *Alexandra Palace, Muswell Hill.*

COVENT GARDEN MARKET.

OCTOBER 3RD.

Flowers.—The supply of these is equal to the demand, which is at present somewhat limited. Foremost amongst those in pots are pretty little Asters, about 6 or 7 inches in height, so densely flowered as to completely hide the leaves; *Fuchsias* from spring and summer cuttings, and fine specimens of *Econia Weltoniensis*. There are also young plants of *Solanum capsicastrum*, with bright orange-scarlet berries, and various dwarf *Chrysanthemums*, as well as *Vallotas* and little plants of *Evergreens*. Cut flowers consist of *Roses*, *Eucharis*, *Bouvardias*, white *Camellias*, *Gardenias*, Chinese *Primulas*, *Mignonette*, *Pelargoniums*, and *Violets*.

Fruit and Vegetables.—Of fruit there is a plentiful supply, but still prices range high. Grapes are good and plentiful, but Peaches are nearly over, as are also Melons and Figs. Pears and Apples are of excellent quality, and very plentiful. Vegetables, which maintain their excellence, consist chiefly of Carrots, Onions, Broccoli, Cauliflower, Brussels Sprouts, Cabbage, Coleworts, Celery, Turnips, Endive, and Radishes.

Prices of Fruits.—Apples, per half-sieve, 9d. to 1s.; *Chilies*, per 100, 2s.; *Cobbs*, per lb., 1s. to 1s. 6d.; *Figs*, per doz., 6d. to 2s.; *Filberts*, per lb., 1s. to 1s. 6d.; *Grapes*, hothouse, black, per lb., 1s. to 6s.; *Muscats*, 2s. to 6s.; *Lemons*, per 100, 14s. to 25s.; *Melons*, each, 2s. to 4s.; *Oranges*, per 100, 12s. to 24s.; *Peaches*, per doz., 6s. to 12s.; *Pears*, per doz., 1s. to 4s.; *Pine Apples*, per lb., 3s. to 6s.; *Tomatoes*, per doz., 1s. to 2s.; *Walnuts*, per bushel, 12s. to 20s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—*Artichokes*, per doz., 1s. 6d. to 3s.; *Beans*, Kidney, per half sieve, 1s. 6d. to 2s.; *Beet Red*, per doz., 1s. to 2s.; *Brussel Sprouts*, per half-sieve, 2s. 6d.; *Cabbage*, per doz., 2s.; *Carrots*, per bunch, 4d. to 6d.; *Cauliflower*, per doz., 3s. to 6s.; *Celery*, per bundle, 1s. 6d. to 2s.; *Coleworts*, per doz. bunches, 3s.; *Cucumbers*, each, 3d. to 6d.; *Endive*, per doz., 2s.; *Fennel*, per bunch, 3d.; *Garlic*, per lb., 6d.; *Herbs*, per bunch, 3d.; *Horseradish*, per bundle, 3s. to 4s.; *Leeks*, per bunch, 3d.; *Lettuces*, per doz. 1s. to 2s.; *Mushrooms*, per pottle, 2s. to 3s.; *Mustard and Cress*, per punnet, 2d.; *Onions*, per bushel, 4s. to 6s.; *button*, per quart, 8d.; *Parsley*, per doz. bunches, 4s.; *Parsnips*, per doz., 9d. to 1s.; *Pea*, per quart, 9d. to 1s.; *Potatoes*, per bushel, 2s. 6d. to 4s.; *Radishes*, per doz. bunches, 1s. to 1s. 6d.; *Rhubarb*, per bundle, 8d. to 1s.; *Salsafy*, do., 1s. to 1s. 6d.; *Scorzonera*, per bundle, 1s.; *Shallots*, per lb., 6d.; *Spinach*, per bushel, 3s.; *Turnips*, per bunch, 3d. to 6d.; *Vegetable Marrows*, per doz., 1s. to 2s.; *Brussels Sprouts*, per half-sieve, 2s. 6d.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

IDEAS ABOUT MUSHROOMS.

A GARDENER gathered some Mushrooms, growing under trees, and presented them to a bar-maid. They proved to be poisonous, and three persons were made ill by them. The case was very sad, for one poor girl died; and sad, too, was it for the gardener. Not only had he to bear the sorrow of the injury he had unwittingly caused, but he was actually committed to take his trial for murder. There had been some "few words" previously between them, and the gift of the Mushrooms, which, in all probability was a practical apology for the quarrel, was made to seem malicious. The grand jury at the Central Criminal Court threw out the bill of indictment as a matter of course, and the poor gardener was set at liberty. Much commiseration was very naturally felt for all parties, and Mr. Justice Denman, with the best and kindest motives, called attention to the importance of laying down some rules for distinguishing the good from the bad. The public journals, with intentions equally good, endeavoured to support his lordship's philanthropy and his lordship's views on edible Funguses in general, until one is compelled to confess that "Mushroom ideas," and "Ideas about Mushrooms," are almost synonymous terms. "Don't gather them from under trees," says the judge; when everyone knows that many of the best kinds will only grow there. For example, the Edible Boletus (*Boletus edulis*), the vegetable beef-steak (*Fistulina hepatica*), and many others. "Gather them in the open field," says the judge again; when many very poisonous ones (*Hygrophori*, &c.) actually grow only there. "Don't eat bright-coloured ones, or any which change colour when cut," says his lordship. Why, the brilliant Orange-milk Agaric (*Lactarius deliciosus*), which bears the distinctive epithet of "delicious," actually turns a verdigris green when bruised; and so exceptions might be taken to every rule laid down by the judge and his commentators. The rules they would lay down are good, no doubt, as general rules, to skilled people, but certainly cannot be followed by persons in general without special education. The true secret of preventing such sad mistakes is, that people should not eat funguses until they have learned to know them by their self-evident individual characters. No skilled knowledge is really necessary. The Blackberry is known from the berry of the deadly Nightshade, which is equally black. People, in picking Parsley, don't gather the poisonous Fool's Parsley, which so often grows near it, though they are utterly ignorant of the botanical names or characters of the plants themselves. Many of the edible funguses have appearances even more distinct than the plant named. For example, the Maned Agaric (*Coprinus comatus*), the Champignon (*Marasmius oreades*), and the Parasol fungus (*Agaricus procureus*), are more readily distinguishable from each other and from everything else in nature, than the common Mushroom (*Agaricus campestris*) itself. When people have once learned to know these individually, they may then eat them with perfect safety, always supposing that they are young and in good condition. And this brings us back to the consideration that, in the instance of poisoning before us, the common Mushroom itself was the offending member of the family, and the judge and his commentators have shot wide of the mark by including edible Funguses in general—since every one knows the common Mushroom, it may well be asked, why should it have proved poisonous in the instance in point?—without any knowledge of the condition of the Mushrooms when gathered and eaten it is difficult to answer this question. It is very rare that the common Mushroom does prove poisonous, but it is well known to do so under certain conditions, and these are almost always when the Mushroom itself is the subject of decay. When the growth of a Mushroom is suddenly stopped, a change in its structure begins; it is often itself attacked by another Fungus. This sends its delicate mycelium threads through the gills, and in its commencement the change might easily be overlooked. It has been known to have been thus over-

looked, and to have produced injurious qualities in the Mushroom. This is one cause, and other forms of decay and change of structure may doubtless have the same effect. The wondrous fact that Mushrooms should so closely resemble one of the highest organised substances in nature, animal muscle, both in its nutritive and chemical properties, is worthy of much thought. The Mushroom is the growth of a few hours, the meat the result, as it were, of an animal's lifetime. Such rapid growth to high excellence entails almost of necessity a decay equally rapid and deleterious. When this is well considered, the wonder will be that Mushrooms, so carelessly gathered and so freely eaten, should not prove poisonous much more frequently than is found to be the case.

COWAN'S LIME-KILN HEATING.

On Saturday, the 4th instant, a committee of gentlemen interested in horticulture met to inspect the new lime-kiln heating apparatus just completed at Hatfield. A large and powerful apparatus on this plan has just been erected for the purpose of heating several large ranges of Vineries and forcing-houses. In addition to heating 7,000 feet of 4-inch piping, it is expected to convert chalk, so plentiful in the neighbourhood, into excellent lime for use on the estate. We believe this is the first time the apparatus has been tested with chalk, and the result of the trial, which took place last Saturday, was as satisfactory as could be expected. The apparatus at Hatfield is the first erected on a large scale, and some idea of its magnitude may be obtained when we describe it as 12 feet wide and from 12 to 13 feet high. The kiln is egg-shaped, being widest in the middle, and contains a solid mass of fuel 10 feet high and 6 feet through in its widest part. Over this glowing mass the boiler is situated, and, being for the most part directly over the fire, is subjected to a very high heating power. We believe Mr. Cowan has made arrangements for surrounding the kiln with a boiler in addition to the one just alluded to; but, so far as our own experience of the hot-water system of heating goes, we believe that the most economical and practical method would be to place an improved saddle boiler directly over the top of the fire. Every hot-water engineer is aware that two-thirds of the heat from a fire rises vertically for every third that is diffused horizontally, and this fact points to a boiler directly over the fire. The kiln need not always be in use, arrangements having been made for the insertion of fire bars immediately below the boiler, which can then be fed with either wood, coal, or coke in the ordinary way. If circumstances require it, however, the whole or part of the kiln itself may be constructed of iron plates, thus forming a boiler of enormous power, capable of heating several miles of 4-inch piping. Lime burning can be carried on without applying the heat for horticultural purposes, and in this case the circulation is turned from the pipes into a large tank placed above the boiler. This system has been well proved with limestone and found to be a success. Anthracite coal is preferred for burning limestone, and, like coke, it emits very little smoke, a great consideration in the immediate vicinity of country residences. The apparatus at Hatfield has been erected by Messrs. Boyd & Sons, of Paisley.

We have received from Mr. Thomson, of Penge, examples of the following Mesembryanthemums—viz., *M. lacerum*, a fleshy triangular-leaved kind, with foliage not unlike that of mutabile or heteropetalum. It bears lovely large orange-crimson-coloured double flowers, superior to those of both the kinds just named, and having the good property of keeping open, even in the absence of direct sunlight. Along with it came in *claudens*, a showy purplish-lilac kind; *Haworthii*, a variety in the way of conspicuous, but larger and more showy; *formosum*, bright rose, with a cream-coloured eye; and *intonsum*. Both the last have a spreading habit, which fits them well either for beds or for rock-work. Associated with these were *imbricans*, a small-growing kind in the way of polyanthum; *aureum*, which has been largely bedded out in the London parks this year; and *aurantiacum*, another abundant-flowering kind, of a deeper and richer shade of orange than that of *aureum*. Among silvery white-flowered kinds may be named *blandum*, a strikingly showy variety; and *incurvum*, also a fine kind, with flowers, as its name implies, more incurved than those of *blandum*. Another free-flowering white kind may be found in *lepidum*, a variety very suitable for rock-work, as are also *echinatum* and its yellow variety, both of which are dwarf, and flower most profusely. *Barbatum* has small delicate peach-coloured blossoms; and *dolabriforme*, unlike others of its race, shuts up its pretty orange-coloured flowers during the day time, and opens them in the evening. *Aureum* was in blossom as early as March, and others have produced multitudes of flowers all through the season.

NOTES OF THE WEEK.

— *NEPENTHES SANGUINEA* is now producing remarkably fine pitchers in the Royal Exotic Nursery, Chelsea. This rare species bears vivid blood-red or crimson-coloured pitchers from 6 to 12 inches in length.

— MR. BULL has now in flower a beautiful new *Tillandsia*, the flower-spike of which is furnished with large bracts of a soft rose colour. *Gastronema sanguineum* is also flowering freely in his nurseries.

— The interesting American Blackberry (*Rubus deliciosus*) is figured in this month's number of the *Botanical Magazine*. The fruit is described as being of delicious sweetness and considerable size, while the flowers somewhat resemble those of a white Rose in size and abundance.

— MESSRS. SUTTON have erected this year, as usual, at the Crystal Palace, a charming harvest trophy. It is a hundred feet in length, and represents the products of both farm and garden in their most attractive aspects. Seeds, too, of many kinds, are prettily arranged in glass cases.

— AN influential meeting was held the other day at Torquay to discuss the question as to the desirability of furnishing that town with a winter garden and aquarium, and the best site on which to place them. It was suggested that the old harbour should be filled up and utilised in that way.

— INTELLIGENCE has arrived of the death of Dr. William Jameson in June last, at Quito, where he had resided for many years as Professor of Chemistry and Botany to the University. As a botanist and zoologist of high standing, Dr. Jameson is well known by his extensive contributions to public institutions in America and Europe.

— At the recent Fungus show at South Kensington, a new economical use for this class of plants was indicated by the Rev. Mr. Berkeley, who produced a cap made out of the beaten-out interior mass of *Polyporus fomentarius*, the amadou or German tinder of commerce, which he describes as both warm and light. It is stated that large use is made in Hungary of this material for caps and waistcoats, and it is also used for caulking boats.

— THE *Swiss Times* states that the Conseil Administratif of Geneva have concluded the purchase of the fine property of Cropettes, containing about 9½ acres, for the sum of 335,100f., subject to the approval of the Municipal Council. The property is beautifully situated on the wooded slope which rises on the north side of the city at Montbrillant; and the object of the purchase is to lay it out as a park for the inhabitants of the quarters of St. Gervais and Paquis.

— As the planting season is now at hand, parties interested in decorating gardens, squares, streets, &c., with trees and shrubs, should spend a little leisure time in making observations, where such exist within the area of this smoke-stricken city (London), to note the kinds which thrive under such disadvantageous circumstances; and, to assist them in arriving at proper conclusions in the matter, we would ask them to remark the noble Plane, the graceful Acacia, the free and handsome Ailanthus, the varieties of the Sumach, and all the family of Poplars, and contrast them with the Lime and other trees which are now denuded of their foliage, and so unsuited for city planting.

— AN English officer, formerly in the Indian army, and thoroughly experienced in the cultivation of Tea, has addressed a memorial to the Italian Government, declaring that many parts of that kingdom are suitable for the cultivation of that plant, and that he himself, if he were invited, would give his services gratuitously to introduce and develop it. We doubt not that both Tea and Coffee could be raised with great success in many parts of Italy, but especially in Sicily, where they would stand the winter. In Naples Coffee berries become a fair size, and the coffee made is good in point of flavour; but it is necessary to have the trees housed during the winter—a precaution which would not be necessary in Sicily.

— We understand that energetic action is being taken with a view to holding a Great International Fruit, Flower, and Plant Show next year at Belfast, on the occasion of the visit of the British Association to that town. We are further informed that not only has the project been warmly taken up and approved of by the horticultural element in the immediate locality, but that cordial and substantial support has been promised by several leading members of the trade, as also by many of the foremost horticulturists both in England and Scotland. The session of the British Association for 1874 will open, we believe, on or about August 19th; consequently, the proposed show will take place some day between that and its close on August 26th. It will be well, both as regards metropolitan

and local fixtures for next year's autumn shows, that this should be borne in mind, so as to leave exhibitors and others, who would care to be present, free for the great gathering at Belfast.

— BOURNEMOUTH, we hear, is expending some £30,000 on ornamental gardens and other improvements, considered necessary for the embellishment of that fashionable watering place.

— We learn that Mr. W. C. Flagg, of Alton, Illinois, has been appointed Secretary to the American Pomological Society, an appointment for which his full knowledge of fruit well qualifies him.

— AN establishment at Nassau, Bahama Islands, has about a thousand hands employed in canning Pine-apples. This season they purchased 1,000,000 Pine-apples, and packed 1,010,000 cans.

— AMONG the latest publications of the Smithsonian Institution is a volume issued under the title of "A Contribution to the History of the Freshwater Algæ of North America," by Horatio C. Wood, jun., M.D.

— THE Hydrangeas which have flowered so freely along the margins of the shrubbery borders and beds in the Royal Horticultural Gardens at South Kensington are still conspicuous, after having been gay for nearly twelve weeks.

— THE Anemone-leaved Geranium (*G. anemonæfolium*) is used largely in the flower-beds in the Royal Horticultural Society's gardens at South Kensington. It does not flower freely outside, but makes a vigorous growth, some of its palmatisect leaves being a foot across. It is well worth a place in the subtropical garden.

— THE second part of vol. xxix. of the "Transactions of the Linnean Society," just published, is occupied by a continuation of Colonel Grant and Professor Oliver's "Botany of the Speke and Grant Expedition." The number of new species described in this part is thirty-five; and it is illustrated by thirty-five full sized 4to plates, the expense of which is munificently borne by Col. Grant.

— THE well known and eminent botanist, Dr. Karl Koch, of Berlin, who has been for twenty-three years secretary of the Prussian Horticultural Society, and editor of the society's journal, has lately sent in his resignation of both these offices. We understand that certain disagreements and disturbances which have prevailed among the members of the society during the last two or three years have resulted in the very serious loss to them of Dr. Koch's distinguished services.

— THE annual Fungus forays of the Woolhope Naturalists' Field Club, in Herefordshire, will take place from October 20th to the 25th. The club meeting is fixed for Thursday, October 23rd, and the fine park of Holme Lacy, near Hereford, is the hunting ground selected. The Rev. M. J. Berkeley, C. E. Broome, Esq., and many other of the leading mycologists will be present; and thus the sunshine of science will certainly be there, and we will trust, too, that the sun of St. Martin will add its own grand tribute towards the brilliancy of the meeting.

— Now, says *Nature*, that so much attention is being paid to the introduction into our colonies of useful foreign trees and crops, we desire to call special attention to the publication at Brisbane of "The Olive and its products: a treatise on the habits, cultivation, and propagation of the tree, and upon the manufacture of oil and other products therefrom," by L. A. Bernays, F.L.S., Vice-President of the Queensland Acclimatisation Society. The work has special reference to the advantages to be derived from the introduction of the Olive into Queensland, and is printed and published at the expense of the Colonial Government.

— THE following method of preserving wooden labels that are to be used on trees or in exposed places is recommended in a German paper. Thoroughly soak the pieces of wood in a strong solution of copperas (sulphate of iron), then lay them, after they are dry, in lime water. This causes the formation of sulphate of lime, a very insoluble salt (gypsum) in the wood. The rapid destruction of labels by the weather is thus prevented. Bast, mats, twine, and other substances used in tying up or covering trees and plants, when treated in the same manner, are similarly preserved. At a recent meeting of a horticultural society in Berlin, wooden labels thus treated were shown which had been constantly exposed to the weather during two years without being affected thereby.

— THE Commissioners of her Majesty's Works and Public Buildings intend to distribute this autumn, as usual, among the working classes and the poor inhabitants of London, the surplus bedding plants in Battersea, Hyde, the Regent's, and Victoria Parks, and in the Royal Gardens, Kew, and the Pleasure Gardens, Hampton Court. If the clergy, school committees, and others interested will make application to the superintendents of the parks nearest to their respective parishes, or to the Director of the Royal Gardens, Kew, or to the Superintendent of Hampton Court Gardens, in the cases of persons residing in those neighbourhoods, they will receive early intimation of the number of plants that can be allotted to each applicant, and of the time and manner of their distribution.

THE INDOOR GARDEN.

PURPLE LADY'S-SLIPPER.

(*CYPRIPEDIUM PURPURATUM*.)

THIS pretty variety of Lady's-Slipper is not unfrequently mistaken for its ubiquitous congener *C. barbatum*, a circumstance not to be wondered at; for, in many respects, the two plants are nearly identical. The foliage is similar to that of Veitch's variety of the Bearded Lady's-Slipper, and the flowers closely resemble those of some varieties of *C. barbatum*, if we except the characteristic glands or warts along the upper margins of the petals, which are absent in *C. purpuratum*. The petals of *C. barbatum*, and all its varieties, if we except *C. barbatum* Dayii, are more or less spotted with dark purple, but *purpuratum* seldom shows these markings, and has more pure white in the upper part of the upper sepal, or standard, than most varieties of *barbatum*; with these exceptions, it is a counterpart of the Bearded Lady's-Slipper, to which no doubt it is very closely allied. It flowers during the autumn and winter months in a moderately warm temperature, the prevailing colours being purple, white, and green. It is a native of Java, and does well treated like the other tropical species of this genus. Our illustration shows the general contour of the plant, and is a trifle less than half the natural size. B.

HYACINTH CULTURE.

THE most suitable compost for the cultivation of Hyacinths in pots consists of one-half decomposed friable turfy loam, the remainder equal parts of well rotted-manure, leaf-mould, and river sand. As in all other cases, the materials should be in the intermediate condition between wet and dry when mixed for use, so that the compost may admit of being firmly pressed without being made adhesive. The season for planting is from September onwards. When planted in pots, two-thirds of the bulb should be left above the surface of the soil. The size of the pots used may be regulated by the purposes for which the plants are required, as the quantity of soil supplied to the roots is of less importance than a regular and sufficient supply of moisture, so that if very small pots are required for particular purposes they may be used, care being taken during the growth of the plant that the roots do not want water; 5-inch pots (forty-eights) for one bulb, and 6-inch pots (thirty-twos) for two or three bulbs, are suitable sizes for general use. We may remark, that the effect of planting two or three bulbs together is so much superior to that produced by single bulbs, that except for special purposes few persons having once adapted the former will be satisfied with the latter plan. In the process of potting, the soil should be pressed moderately firm, but should not be too much consolidated. After planting, the pots are best set out of doors, and well watered so as to ensure that the soil becomes thoroughly moistened, for, unless this is attended to, the roots as they commence growing do not readily penetrate, and the bulbs become thrown on one side, so that the after-growth is disfigured; this is especially liable to occur when the soil besides being dry is also firmly pressed down. When the water has passed away, the bulbs are to be covered over to a

depth of six inches with old rotted tan or leaves, under which they are to remain until the pots become filled with roots, and the young leaves have shot out an inch or so in height above the soil they are planted in. Then, after clearing away all the particles of earth from the crowns and young leaves, so that they may be fully exposed to light, the pots are to be removed to a cold house or frame, where they remain till they are required for forcing. Such plants introduced to a warm atmosphere in succession will furnish a supply of bloom for the decoration of the conservatory or the window from December till May. The actual period when they reach the blooming condition will depend, of course, very much on the time when they are removed to a warm temperature, and the amount of forcing to which they are subjected. Gentle excitement, be it remembered, is, in all cases, preferable to hard forcing. Those bulbs which are potted by the beginning of September may be had in bloom about Christmas; while others potted about the end of September or the beginning of October, will bloom about March, if assisted with a slight increase of temperature.

They are best grown as near as possible to the glass, and with all the ventilation that can be afforded them; these two agencies acting on the plant so as to secure short, stiff, healthy foliage. The pots should be examined from time to time after potting, in order that when they become tolerably filled with roots the bulbs may be removed from beneath the plunging material before their leaves and young stems have much grown. In any case, the leaves should not be suffered to grow more than an inch or two in length while they remain in this position. Those plants which grow slowly without the agency of artificial heat may be expected to produce the most vigorous, perfect, and highly-coloured trusses of bloom. When the bulbs are planted in glasses, their bases only should touch the water. The glasses should, for a time, be placed in a dark cool place, until the roots have attained a considerable length, so that when brought out and exposed to the light, the roots may be capable of affording a good supply of nourishment to the young leaves and stems. From time to time the bulbs should be examined, and all superfluous or decaying matters



Purple Lady's-Slipper (*Cypripedium purpuratum*).

which occasionally form about their base should be carefully cleared away. No other attention is required beyond an occasional supply of fresh water, which will be oftener needed as the plants attain full growth, and approach the flowering condition. It may be hardly necessary to mention that neither glasses nor pots should be kept on the mantelpiece, as the heat from the fire is inimical to the vigorous development and duration of the flowers. They should, when grown in the dwelling-house be kept all day at the window, where they may enjoy the full light, and a cool room is preferable, but it is proper to remove them from the window at night, during severe frosty periods. Rain or soft water should always be employed.

In making a selection of varieties from the dealers' lists, it is always the better plan to include those only which, having been previously grown, have been proved to produce good flowers; not allowing other kinds to be substituted to suit the vendor's convenience. This should more than ever be insisted on, as many inferior varieties are now offered by the Dutch

wholesale growers, at a cheap rate. Some of the old favourite kinds are beginning to degenerate; and as it occupies many years to acquire a large stock of any new variety, so when once a variety is brought into cultivation in the Dutch gardens, it is many years before the growers can be induced to discard it, though it may be known to be worthless in comparison with other varieties of the same class. This perhaps, is not surprising, so long as there are to be found in England purchasers of these cheap inferior sorts. The single-flowered varieties, though by many supposed to be inferior to double ones, are in reality not so. Indeed, it is a question whether for vigour of constitution, and fullness of truss, the single kinds are not superior to the double, for though there are fewer segments to each individual flower in the former, yet the truss or spike consists of two or three times the number of pips or flowers, and in most instances the trusses produced are much larger. The single-flowered kinds all succeed well in glasses. Few flowers are more effective for beds in the flower garden during the latter part of April and the beginning of May, than the distinct-coloured varieties of Hyacinth. For this purpose, a few only of distinct and decided colours should be chosen; these should be planted in masses or in distinct beds of the same colour and kind. They require a light, rich, thoroughly drained soil, and it may be necessary to provide this to the depth of a foot or more, by removing the natural soil and substituting a proper compost. One of the most suitable composts for beds would be formed by mixed equal parts of—1, the soil of turfs of sandy loam, cut very thin, and perfectly rotted; 2, thoroughly decayed cow manure, or, in default of this, hot-bed manure and leaves well decayed; and 3, river or sea sand. The beds should be prepared in September or early in October in fine dry weather, and the bulbs planted about 6 inches beneath the surface. During the winter and early spring any devices may be resorted to, to prevent the soil becoming saturated by rains, or seriously disturbed by frosts, for which purposes a waterproof covering cloth may be found the most effective, though a thick mulching of any of the ordinary protecting materials should be sufficient. Any coverings of these kinds must of course be removed as soon as the leaves begin to burst through the soil; after which a slight shelter against early spring frosts afforded to the foliage, and against dashing rains afforded to the flowers, will be repaid by the results. The bulbs are to be removed when the leaves have decayed, previously to which, in a well-ordered garden, a succession of flowers will have been introduced.

A FEW HINTS ON WHAT TO AVOID AND PRACTISE.—Avoid late planting, which is fatal to success, however large and matured the bulbs may be. A successful bloom from Hyacinths invariably depends upon obtaining a slow and mature formation of the root-fibres before the leaf-growth, either in the darkened recesses of a room, for glass culture, or by coverings of soil in garden borders for pot culture. Where cool and dark recesses are not at hand, the glasses may be heavily screened from light by sheets of paper or some similar means. Never place the Glasses upon a mantelpiece or shelf within the influence of fire heat during the process of growth. Avoid a low water mark in the glasses, by keeping it to a level with the base of each bulb. To ensure vigorous growth and good bloom, the most favourable exposure to sunlight, and occasional fresh air when mild, are essential. All extremes of temperature should be avoided, and, for the earliest blooms, where no outward window screens are used in severe weather, the glasses should be removed nightly to a side table until morning, and then replaced. To stimulate and strengthen the growth, dissolve a pinch of sulphate of ammonia occasionally in the water after the bulbs are exposed to light.

E. G. HENDERSON & SON.

Wellington-Road Nursery, St. John's Wood.

CYPRIPEDIUM ROEZLI.

This handsome species was discovered by M. Roezl, on the banks of the River Dagua, in Columbia, between the western and central ranges of the Rocky Mountains. It is the largest and most vigorous-growing of all known species of *Cypripedium*. The leaves are upwards of 3 feet in length, and the stem, which is sometimes over 3 feet high, bears from fifteen to twenty flowers. The leaves are in two rows, strap-shaped

pointed at the end, sheathing the stem, keeled on the under surface, and flat on the upper surface. The plant is smooth in every part. The flower has two Rose-coloured sepals, marked with veins of a deeper hue, both of an oval lance-shaped form, the lower one being considerably larger than the upper. The two petals are each about 4 inches long, very narrow, and ending in a long sharp point; they are of a yellow colour, edged with a purplish margin. The lip is about 2 inches long, yellowish, passing into purplish-red on the part which forms the oblong slipper. The plant is easy of culture in a deep pot, filled with a mixture of leaf-mould and Moss, and kept in a warm part of the Orchid house. It is a very distinct and handsome species, and is well figured in the April number of this year's *Gartenflora*.

EVILS OF RAPID POTTING.

THE process of potting plants consists of a certain combination of skilful and precise movements which result, or should result, in setting the plant in the pot in such a manner that the plant may almost immediately commence a development of roots and extension of growth. These movements, or at least some of them, may be made with military exactness. The operator may seize the pot with one hand, the plant with the other at one and the same time; he may then complete the operation in either three or four exact movements. In the former case the plant would be potted in four seconds, in the latter case five seconds, which would amount to seven thousand two hundred in a day of ten hours. But part of the operation of potting small plants or rooted cuttings cannot be executed with such precision, viz., the proper disposition of the roots. If the roots of the plant are pushed into the pot with a wad, the movement would then form one of the four or five, and the operation completed in four or five seconds; but if the roots were placed in the pot, as they should be to make a profitable job of it, the time consumed would be about equal to all the rest, which would reduce the number of plants potted in a day of ten hours to about three thousand, or from that to three thousand five hundred, which is all that any man can do in a workmanlike manner. As no man, be he ever so skilled in his movements, can overcome the element of time sufficiently to make from four to five thousand distinct movements in an hour, each movement requiring at least one second of time, and every man at all acquainted with the potting bench, knows perfectly well that not even a rooted *Verbena* cutting can be transferred to a pot and passed in less than four movements. There may, however, be a method of bringing a plant, pot, and soil together with a jerk, in such a manner that once in a while the roots of a plant may happen to catch a favourable hold and the plant grow; but in this case the time and labour required in emptying the pots afterwards will be so great that the method will never be adopted for profit. After considerable experience in this line, I am fully convinced that unless plants are decently handled in potting they soon show it, whether they are rooted cuttings or plants of more mature growth.—H. E. CHITTY, in "*Gardener's Monthly*."

French Culture of *Dracænas*.—The article in *THE GARDEN* about the nurseries at Morte Fontaine (see p. 194) was very interesting to me, as I have worked, before the war, in several nurseries near Paris. The culture, however, was nearly everywhere the same as described in your article. We generally grew the *Dracænas* to one metre (3½ feet) high, under glass, in frames, with bottom-heat from dung. We potted them in August, and afterwards placed them again on bottom-heat, and in this way the plants were established in the pots for the autumn, at which time we sold all of them to the smaller nurserymen and flower-dealers generally—*D. congesta* at two francs; *D. australis*, at two-and-a-half francs; *D. indivisa*, at three francs apiece. The chief point in growing them was to give them always sufficient bottom-heat from the time they were put in as cuttings in January or February until the autumn. In this way we succeeded in raising plants over 3 feet high.—G. W.

Conservatory *Rhododendrons*.—What I consider the true *Rhododendron Javanicum* is the Orange variety, with a rich waxy-looking foliage, inclined to purple at its edges. I once had (and some friends also) a very inferior variety, a dull yellow flower and bad constitution. I beg to thank "W. E. G." for telling me that I can find Smith's aureum at Messrs. Veitch's, and will avail myself of the information, as it is (where it succeeds) a most glorious flower. I may add to my list of greenhouse or conservatory *Rhododendrons*, *R. Sikkim*, *R. niveum*, a very rich plum colour with beautiful foliage. As it

flowers profusely in the open air in Cornwall, it is probable that the less warmth and more air it has (in fact, mere protection from severe frost and cold rain) the better it will succeed. *Rhododendron Nilgherriicum* is well worth growing in a conservatory where it does not succeed (as it does with me) in the open ground; also *Zelanicum*, *barbatum*, *Edgeworthii*, *Wrightii*, and the glorious *Nuttalii*.—"THE OLD SOLDIER."

PLATYCERIUM BIFORME.

THOUGH this free-growing and somewhat robust species of Fern is by no means common in collections, it is well worth growing. Our illustration represents a fine specimen of it in the collection of Mr. Flowers, of Furzedown, and was inadvertently omitted in our account of that place last week (see p. 278). The plant at Furzedown grows on a flat block of wood in a



Platycerium biforme at Furzedown.

warm moist stove, but, in the Sheffield Botanic Garden, we saw a plant of it luxuriating in an inverted flower-pot, to which it was secured by copper wires. When grown in a pot, the best compost for it is a mixture of peat and turfy loam, with the addition of a sufficient quantity of sand to keep the whole in a porous state. *Platyceriums* are well adapted for general cultivation; and *P. alcicorne*, the common Stag's Horn Fern, is much used at Chatsworth for the decoration of hanging baskets. It will be seen by our sketch that *P. biforme* is distinct in habit and very ornamental. B.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Lapageria alba.—I observe a notice in your columns that *Lapageria alba* is not a strong grower. I find it to be just the reverse. I have a plant in my New Holland plant-house which has spread 25 feet in length, and has at the present time 178 blossoms expanded. On the other side of the house there is a plant of *Lapageria rubra*, which has not made nearly such rapid growth, but it is covered with blossom.—R. H.

Climbing Carnations.—I have a plant of the white climbing *Carnation La Belle*, in a 7-inch pot, having three tall shoots about 1½ feet high. It has not yet bloomed. I want to know what I am to do with it. Is it to be planted out or left in the pot, as it is growing so tall? Will it bloom before next year?—HENRY LITTLEWOOD, *Cient House, Stourbridge*. [Your plant will probably bloom before Christmas. It should be potted in a compost of loam, leaf-mould, and sand, in a pot thoroughly well drained, and should be well watered with rain water. The shoots should be tied to separate stakes at least 3 feet in length, and the plant should be kept in a cool well ventilated greenhouse.]

THE ARBORETUM.

DEUTZIAS.

WITH the exception of a very few species, all the plants of this genus are highly ornamental in character. The object of the present article (translated from the *Revue Horticole*), therefore, will be to direct attention to and describe some of the finest species and varieties. It is, by no means, easy to give an exact idea of each kind in a description, as they resemble each other very much in their general aspect, and have many characteristics in common, so that the following account may be more properly considered an enumeration, bearing in mind that all the plants mentioned are of a high order of merit, and that they were originally introduced from Japan, or were raised from seed of imported plants. We shall commence with the species which has been longest in cultivation, and which, if not the most vigorous, is the largest of the genus.

D. scabra.—This is a shrub growing 6½ feet or more in height, with very numerous erect branches, covered with a greyish bark, which, on the old wood, comes off in strips, like the bark of the Plane and other trees. The leaves are of a greyish-green colour, large in size, and rough with a stiff pubescence. The flowers appear in June, and are numerous, single, and white. In consequence of the immense number of new shoots which this species produces every year, it is necessary to cut away large quantities of dead wood, which rather disfigures the appearance of the plant. Much time is often lost in this necessary pruning.

D. crenata.—This, which very much resembles the preceding, is very probably only a variety of it, and forms a shrub of a somewhat more spreading habit, the branches and shoots diverging from each other more widely. The flowers are almost identical with those of the last-named species. There is a very fine and ornamental variety with double flowers, *D. crenata flore pleno* (which is described and figured in the *Revue Horticole* for 1867, p. 70). This variety—which, as well as the type, was sent from Japan—has very double flowers, of a fine rosy-flesh colour; they are also extremely numerous and handsome. In habit and vigour of growth, the plant exactly resembles the type, except that the bark of the young shoots is somewhat darker in colour. Another variety, equally fine, is *D. candidissima plena*, the flowers of which are very double, and of the purest white, without the least tinge of rose. It was raised in 1868 by MM. Frœbel & Co., nurserymen, of Zurich, from seed of *D. crenata flore pleno*. Although quite as vigorous and free-flowering as the parent, it differs from it very much in habit, which almost exactly resembles that of *D. Fortunei*—so much so that it might be easily mistaken for it. Its leaves, which are very slightly undulated, are of a much more lively green colour.

D. Fortunei.—The native country of this species is not well known. The name first appeared in trade catalogues about 1865, and would seem to point to a Chinese origin. It is a much finer species than *D. crenata*, having a more pleasing habit, while it is quite as vigorous-growing and hardy, and much more abundant in flowering.

D. canescens and **D. staminea**, which are very closely-allied species, are hardly to be met with except in a few botanic gardens. As ornamental plants, however, they are much inferior to the species already mentioned.

D. gracilis.—This species forms a tufted bush about 20 inches in height, and is an excellent subject for edgings in large gardens and parks. It is very much grown as a forcing-plant, and was originally introduced from Japan. A variety has been raised from it, the only merit of which is that its leaves are variegated with white. It is not as hardy as the parent plant.

Some other species of *Deutzia* have been described or merely named, such as *D. Brunonianana*, Wall., Cat. Ind. Orient.; *D. corymbosa*, R. Br., ex Wall., l.c.; *D. grandiflora*, Bunge; and *D. parviflora*, Bunge. These are said to be natives of Northern China, but, beyond this, hardly anything is known about them.

Culture.—The culture of these plants is exceedingly easy, as they do well in almost any kind of soil, provided it does not contain much lime. In soils of a very calcareous nature, the leaves become yellow, the growth is feeble, and the bloom scanty.

Propagation.—This is readily effected by means of cuttings, either herbaceous or hard-wooded. The latter are made from November to March, in the following manner:—The branches are cut into lengths of 10 or 12 inches, which are stuck into free, light, sandy soil, and watered when necessary. A good layer of straw over the surface will contribute very much to their striking successfully. Herbaceous cuttings are made all through the summer, beginning in June or July. Half-ripened shoots are selected for this purpose. The cuttings are stuck into a border of heath-soil, with a northern aspect, or under cloches in small pots or in the open ground, where they soon root. *Deutzias* may also be multiplied from seed sown in

spring in heath-soil, which must be kept constantly slightly moist by gentle waterings. The seed, being very small, should be very slightly covered with soil, which explains the necessity for frequent waterings. This mode of propagation, however it may fail to exactly reproduce varieties, is desirable when new varieties are sought for. The seed may be sown in pans or pots, which should be placed under a frame, or in a sheltered place in the open air.

LARGE TREES AT LONGLEAT.

OAK.—25 feet 6 inches circumference of stem, at 5 feet from the ground.

ELM.—24 feet 6 inches circumference of stem, at 5 feet from the ground.

LIME TREES.—From 15 to 22 feet circumference of stem at 5 feet from the ground, and of heights from 100 to 130 feet.

BEECH.—Common, 14 feet 6 inches circumference of stem at 5 feet from the ground. Purple-leaved, 7 feet 7 inches circumference of stem at 5 feet from the ground, height about 80 feet.

ASH.—Several 16 feet circumference of stem at 5 feet from the ground.

HORSE CHESTNUT.—15 feet 7 inches circumference of stem at 5 feet from the ground.

ABELE POPLAR.—14 feet 5 inches circumference of stem at 5 feet from the ground, and from 80 to 120 feet in height; 50 or 60 feet of that being clear of branches.

ORIENTAL PLANE.—9 feet 8 inches circumference of stem at 5 feet from the ground, and about 85 feet high.

SPRUCE FIR.—10 feet 5 inches circumference of stem at 5 feet from the ground, and over 100 feet in height.

SILVER FIR.—15 feet circumference of stem at 5 feet, and about 140 feet in height.

TULIP TREE.—11 feet 6 inches circumference of stem at 5 feet from the ground, and 100 feet in height.

AMERICAN SCARLET OAK.—11 feet circumference of stem, at 5 feet from the ground.

SALISBURIA ADIANTIFOLIA.—63 feet in height, and about 6 feet circumference of stem at 5 feet from the ground.

ARAUCARIA CUNNINGHAMII.—35 in height and 3 feet circumference of stem at 5 feet from the ground.

DACRYDIUM FRANKLINII.—24 feet high.

SEQUOIA SEMPERVIRENS.—55 feet in height and 6 feet 2 inches circumference of stem at 5 feet from the ground.

SEQUOIA GIGANTEA.—36 feet in height and 4 feet 2 inches circumference of stem at 5 feet from the ground.

QUERCUS CERRIS.—10 feet 6 inches circumference of stem.

YEW.—50 feet in height, circumference of branches 165 feet. At one foot from the ground the stem measures 32 feet in circumference, and the smallest girth is 24 feet. This tree is said to be about 1,200 years old.

NEW JERSEY TEA PLANTS.

AMONG the many fine shrubs of the Pacific coast, those belonging to the genus *Ceanothus* are conspicuous in early spring for their lilac, light blue, and white, delicate, small flowers in large clusters. One of the commonest, as well as the finest, of these (*C. thrysiflorus*) is there often called by the incorrect name of "Lilac." As is the case with many other fine things of California and Oregon, they are not, as a general rule, hardy upon the Atlantic coast, at least the northern part of it. We have, however, two species that are native here, and are popularly known as New Jersey Tea, although they are not peculiar to New Jersey. These eastern species, *Ceanothus americanus* and *C. ovalis*, are so nearly alike, save in the shape of their leaves, that the ordinary observer would take them both for the same species. They bear the name, New Jersey Tea, because the leaves were used for tea during the revolution. One writer remarks that there could hardly have been a greater test of the patriotism of our grandmothers than the drinking of this native tea. A few years ago there was much talk about the discovery of the true Tea plant in the mountains of Pennsylvania, and a company was formed to work this wonderful discovery. It fell to the lot of the writer to show that this tea, "precisely like the Assam," was nothing but the old *Ceanothus americanus*. He was threatened with prosecution for damages, but has not since heard of the indignant president or the wonderful tea company. Either of these species makes a charming low shrub in the garden, as both are completely covered with the delicate flowers.—J. SAUL, Washington. [The two eastern species above named would, no doubt, suit our cold district better than some of the tenderer kinds. One prostrate kind which we saw on the mountains of California would also prove hardy everywhere with us.]

Weeping Trees.—With a fine well kept velvety green lawn, tastefully planted with ornamental trees and shrubs, the grounds around a dwelling may be rendered very charming, but the effect may nevertheless be increased by a judicious selection of weeping trees. Of these, some of the most beautiful are Weeping Ash, Weeping Beech, cut-leaved Weeping Birch, Camperdown Weeping Elm, Weeping Sophora, white-leaved Weeping Linden, Weeping Mountain Ash, Weeping Poplar, American Weeping Willow, and Kilmarnock Weeping Willow.

The Tree Mallow in California.—At a late horticultural meeting at Sacramento, the following report was given in regard to this tree:—"The tree Mallow seems originally to have come from Japan; its botanical name is *Lavatera assurgentiflora* (Kellogg), and it is valuable for ornament, shade, and for feeding animals. It attains a maximum height of 30 feet in about eight years; is evergreen, and blooms nearly the whole year round. The trees grow from seeds, which drop from the tree, and require no cultivation whatever. They grow rapidly, and in two years cattle could be allowed to browse on them, as they do not eat the branches, only the large, mucilaginous leaves. The trunk or body of the tree is the part which contains the fibre, the branches being always tender and green, not woody. Its leaves and seeds possess much medicinal virtue as a demulcent, having the properties of both Field Mallows and Slippery Elm."

Clethras.—It has been said that our wild flowers lack odour. This is true of many of the showiest of them, but the *Clethras* have fragrance enough for a dozen plants. Those familiar with the vegetation of our Northern swamps and wet lands must know the Alder-leaved *Clethra*, with its pure white, oppressively fragrant flowers and Alder-like leaves. In the Alleghanies, Virginia, and southward we have the pointed-leaved *Clethra* (*C. acuminata*), and very much like the other except in the shape of the leaves. Both are inhabitants of swamps, and both, like many other swamp plants, do well in ordinary garden soil. Both the Alder-leaved and the pointed-leaved *Clethras* are eminently worthy of cultivation. They have the merit of blooming late—July and August—are showy with their abundant spikes of white flowers, and are excessively fragrant. The last-named, though a native of the Southern States, has endured the past disastrous winter near New York, with only the loss of the very tips of its twigs. Our best nurseries keep both species, and they may be obtained from the swamps. We may here state that, to succeed with these or any other shrubs taken from their native localities, they must be cut back freely. When growing wild, shrubs have very spare roots. In transplanting, take them as they are and with what roots you can get, failure is very certain. On taking them up, cut them back to a single stick, and success is quite sure.—*Hearth and Home*. [These interesting shrubs well deserve a place in our collections. They are quite hardy in England.]

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Golden Cedar of Lebanon.—In the nurseries of Mr. Wm. Cutbush, at Barnet, I noticed a few days since two very pretty plants of this Cedar, the points of all the shoots of which are of a yellowish colour quite permanent and not in the least liable to be injured by frost.—W. F.

Sophora japonica var. crispata.—This is one of the prettiest and most singular of hardy trees; like the common *Sophora* it is quite hardy, a free grower, and is densely furnished with dark green leaves that adhere to the wood till late in the season. Its singularity consists in the curious and uniform manner in which the leaves are curled, the points of all the shoots resembling, as it were, clusters of ringlets. I observed some good young specimens of it in Messrs. Osborn's nurseries, and it may also be occasionally met with in private gardens.—W. F.

The Tamarisk.—The article on the Tamarisk (p. 183) by Mr. McNab, has reminded me of my beautiful tree; yes, a Tamarisk tree which is growing on my lawn. It is 14 feet high, with a clear stem $2\frac{1}{2}$ feet round at 2 feet from the ground. I received this many years ago from the continent as *Tamarix indica*. It has been most brilliant with its bright pink flowers for nearly six weeks, so graceful, so charming. I read in "Migman's Travels in Koordistan" that in the valley of the Euphrates and near Bagdad the *Tamarix orientalis* rivals the Palm trees in height. This must be my *Tamarix indica*.—THOS. RIVERS, Sawbridgeworth.

Ulmus Berardi.—This is a very remarkable and distinct variety of the common Elm (*Ulmus campestris*), raised in 1865 by MM. Simon-Louis of Metz. It forms a very bushy shrub with very slender branchlets, and in its foliage exactly resembles *Comptonia asplenifolia*. The leaves are of a very dark green, almost black, very small, and irregularly crenated, like those of *Planera crenata*, and usually stand erect on the branches, which they almost entirely hide from view. This variety is at present not much known, but it cannot be too highly recommended as a singular, effective, and ornamental shrub.

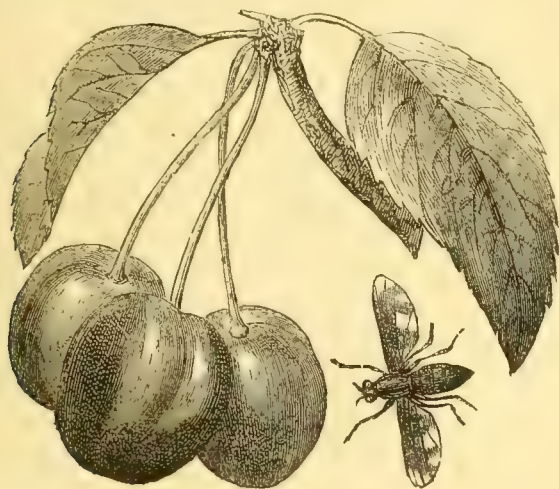
How to Propagate the Sugar Maple.—A neighbour of mine has a Sugar Maple tree, and wishes to increase it so as to have young trees to plant about a park. Can you tell me how this can best be done?—J. H. W. T. [The Maple (except it be one of the seminal varieties) is best increased by means of seeds, which should be sown as soon as they are ripe, in a bed of light soil in the open ground. Layering, when it can be practised, is a more expeditious and certain way of increasing any particular variety, but as that cannot be done in the case of a large tree, you had better try cuttings made of the current year's growth, put in now, or even later, in any light soil. Cuttings made of the half-ripened wood in summer, also strike freely, if placed in a close frame, and kept rather moist.—GEORGE GORDON.]

GARDEN DESTROYERS.

THE CHERRY FLY.

(ORTALIS CERASI.)

SOME little two-winged flies, having their transparent wings elegantly blotched or marked like those of the fly figured in the accompanying wood-cut, may often be seen in orchards and gardens. These, for the most part, belong to the genera *Ortalis*, or *Tephritis*. The insect here figured is one of them. It is a species of *Ortalis*, and feeds on the fruit of the Cherry; not, indeed, of every kind of Cherry, for it eschews all those which are acid or acidulous, but on the fruit of the sweet soft kinds, such as the different varieties of Gean and sweet Cherry. It is in some seasons so abundant that an unobservant lover of Cherries may consume almost as many maggots as fruit without knowing it. The fly is common in the month of May in those districts where Cherries and Geans are much grown. It is black, with a yellow head, and its transparent wings are obscured by four transverse bands. The female fly lays one egg on each fruit. As soon as the maggot comes out of the egg it makes haste to bury itself in the Cherry in order to consume the pulp. It is elongate, horn-shaped, or conical, and white, but when writhing in the purplish or rosy pulp, and full of its juice, it partakes also of its colour. Generally speaking, its presence does not



The Cherry Fly.

prevent the fruit increasing in size and arriving at maturity, although sometimes the Cherry drops a little before its perfect development. When the maggot is full grown it comes out of the Cherry and buries itself in the earth, where it passes into the pupa, in which state it remains until the month of May of the following year, when it comes out as the perfect insect. As already said, the *Ortalis* does not attack every kind of Cherry. Even of the Geans there is a kind in Normandy called the "Guigne a Collier" (a variety in which the corolla forms a persistent collar round the fruit), which Boisduval says is free from its attacks. He adds that it has not been observed in the wild Cherry (*Prunus avium*). A. M.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Rapidity of production of Phylloxera.—M. Lichtenstein considers that nine generations often appear in the summer months. A letter from M. Dumas describes the good effects of sulphide of carbon as a remedy against the insect.

American Blight.—In France, Apple trees suffering from American blight are treated in the following manner; the earth is removed from about the roots, on which a quantity of slaked lime is deposited; after this the earth is replaced. The remedy is said to be quite successful.

To Destroy Wasps.—Dissolve two ounces of cyanide of potash in a pint of water and pour the liquid into their nests at night. The solution is, of course, very poisonous and ought only to be entrusted to a responsible person.—ARTHUR DECK, Cambridge.

Alcohol and Mealy Bug.—Mr. Jordon, of St. Louis, says, in the *Gardener's Monthly*, that he has removed these pests from thousands of the most delicate stove plants without injury to the latter, simply by applying frequently, for a few weeks, "alcohol diluted with five per cent. of water." The most convenient equipment, he thinks, is a fine brush put through the cork of a wide-mouthed bottle.

THE FRUIT GARDEN.

BRANCH PROPAGATION OF APPLE TREES.

WHEN I was appointed to the care of these grounds, two years ago, there were some half dozen old and barren Apple trees, occupying a position for which they were not suitable subjects; they were, therefore, sentenced to be "cut down." Wishing to experiment on them, however, their sentence was commuted to letting them "run a year's chance," and have their roots well subjected to the torture of spade and axe, and, as a matter of course, have their branches reduced proportionately. I therefore set to work, sawed off many of the superfluous branches, pruned the trees into some shape, and removed hosts of suckers which had sprung up at their base; then, at 5 or 6 feet from the stems all round, I had a trench excavated some 3 or 4 feet wide, and not less than 2 feet deep. Of course there was many a gross root met with during the operation, and these were scrupulously cut away with a sharp axe. I then had several wheelbarrowfuls—sufficient to fill the trench to within one foot of the surface—of thoroughly rotten manure put into each trench; then I had the soil nicely forked from among the roots, out over the manure, taking particular care that the roots were fractured as little as possible. There was substituted for the old soil taken from among the roots a compost of fresh loam, which was well incorporated with decayed manure, and which had been mixed up for some time previously. All was then firmly trodden, the surface levelled, and the work was complete. There is nothing remarkable so far, but the result will come out by-and-by. The spring time came round, fruit trees blossomed, and all nature had roused herself into perfect activity. I eagerly beheld those trees on which so much labour had been bestowed, hoping my experiment with them might result in some change, such as the development of blossom buds, which might in some measure satisfy our curiosity as to whether we might reasonably expect a fair crop of fruit from them. As the season advanced, however, I could notice no very apparent change for the better amongst those Apple trees, except one very rusty-looking old warrior which blossomed abundantly and perfected an enormous crop of fruit; but, the quality being very inferior, it was not thought worth keeping, so it was cut down with the others in the autumn. All the branches of the Apple trees were thrown into a heap with other brushwood, and there continued until last May, when, as I required a large quantity of Pea stakes, I had them utilised for that purpose. When having the ground cleared off on the 1st of September, to be planted with a late crop of Celery, how great was my surprise on finding that many of the old Pea stakes had actually become perfect Apple trees! Yes, they have become nice thrifty specimens, and promise to do well, as they are well furnished with shoots of the current year's growth, some 4 or 5 inches long. Now, may I not ask, is not this something remarkable? To say we can saw off from old Apple trees branches some ten or twelve years old, thrust them into the ground, there leave them to take care of themselves, and reasonably expect them to become trees, which very probably will bear fruit the second year—how simple and expeditious a mode of getting up an orchard this would be, rather than have to wait years together for "worked trees!" But, before we proceed to work, we should know what to do. The branches of all Apple trees will not answer our purpose; we must have recourse to the "rusty-looking" old fellows, so frequently to be met with in old orchards. As I fear this term "rusty-looking" may be ambiguous to some, or perhaps misunderstood for diseased, let me explain that I have only applied the remark to the tree which I have experimented with on account of its having had its branches surrounded (and at almost regular intervals) with protuberances, which gave it a very rustical appearance. The branches of the whole half-dozen Apple trees above mentioned were used as the Pea stakes referred to; but in no one instance have I found any branch establish itself except those rusty-looking or having protuberances; and in no one instance has even any of those with protuberances established itself, except when that protuberance was placed below the surface. From what I have seen, I can assert that these protuberances on some Apple tree branches are nothing less than masses of undeveloped roots, which, when subjected to the invigorating influence of the soil, soon push themselves into activity. Since branches of Apple trees, rudely thrust into the ground so late as May, after having lain exposed to all inclemencies of the winter, have made such healthy masses of roots as I have recently observed them to do, might we not expect very satisfactory results indeed were such branches put in at the right season, and with a little care? Yes, I feel confident the result would be most satisfactory. Perhaps curiosity, if not a motive of economy, will induce some of your readers to try this easy mode of raising Apple trees. It is to be hoped they will let us know of their success.

Another way in which those protuberated branches may be converted into perfect Apple trees is to attach to them flower pots, or

wooden boxes made for the purpose, so fixed that the protuberated part—viz., the part likely to emit roots—would be inclosed; and then filled up with, we will say, sandy soil, though I feel satisfied any soil would do. There can be no doubt but in this way Apple trees would be raised from branches while actually producing their fruit.

M. Cullen, Ennis.

MICHAEL BARRY.

CULTURE OF THE PINE-APPLE.

BY PETER WALLACE.

NOTWITHSTANDING the progress which has been made in most departments of horticulture during the last thirty years, I have never seen Pine-apples better grown than they were at Chatsworth, by Mr. Stewart, about twenty-seven years ago. Sir Joseph Paxton, who was never satisfied with things half done, sent Mr. Stewart to Meudon and elsewhere in France to study Pine culture in that country, and the result was an entire alteration of the system pursued at Chatsworth. Tan and pots were exchanged for hot water and planting out in beds; and, instead of having to wait three years, as previously, before the plants could be got into fruit, they were forced into that condition in eighteen months, a period in which it was found that Providences could be induced to ripen fruit 12 lbs. and Queens 6 lbs. in weight. Up to the time mentioned loam only was used, and many will still contend that it is as good as anything else yet employed in Pine culture; but a new compost was introduced, viz., charcoal, loam, and peat, to which was added some wood ashes, and with excellent results. To such a mixture manure, in a liquid state, could be freely given, without fear of its becoming stagnant or sour, and to this, to the charcoal, and to the brisk manner in which the plants were grown, do I attribute Mr. Stewart's success. The best results were obtained from pits about 9 feet in width, and having an air chamber two feet deep, heated by hot-water pipes, and in front by means of pigeon holes, leading from linings made of stable litter. The bottom heat was always in proportion to the top heat, both in winter and summer. Early closing was always practised, at which time the plants were liberally syringed during bright weather. Our plan was to give air early, and to close early in the afternoon. I have often had the Pine pits up to 130° of heat after closing. Shading was resorted to only when the suckers had been newly planted, and then only to such time as they were well rooted. The plan was to allow the suckers to remain on the old stools, to encourage them to make vigorous growth, and, when well developed, to take them off with a portion of the old stem attached, to pot them, and to grow them rapidly ready for planting into the open beds as the pits became vacant. Planting was done at any time from March to September. In some cases the suckers, when taken off the stool, were planted in the permanent beds at once, but the finest fruit was obtained from plants that had been rooted in pots previous to planting them out in the beds.

From one of the pits I have mentioned we cut, in 1847, thirty-one Providence Pines, several of which weighed 12 lbs., and none were under 9 lbs. From the same pit were cut some smooth-leaved Cayennes, weighing 7 lbs.; nor was it an unusual thing to cut half-a-dozen Queens at a time, each weighing 6 lbs. About the time I have mentioned, Pine-apple cultivation seemed to have sprung into new life, not only at Chatsworth, but at Bickton, Trentham, Bowood, Gunnersbury, and other places where good cultivators were producing first-class fruit, and more was said and written on the subject than at any other period. About this time, too, several good new Pine-apples made their appearance, among which were the smooth and prickly Cayennes and Charlotte Rothschild, all of which possess the property of growing nearly as large as the Providence, and of being better flavoured.

THE MANGO AND ITS VARIETIES.

ALL authorities admit *Mangifera indica* to be truly indigenous to the East Indies, and believe its cultivation to have extended thence to Muscat, Burmah, the Straits Settlements, and the West Indies, resulting ultimately in such diversity as to render it difficult to draw a definite line between species and varieties. The word Mango is a European corruption of the Sunda name "mangga," and by a European agency has spread far and wide and secured general adoption, to the exclusion of

the name "am," or "aum," by which name both fruit and tree are most widely known in India, although possessing many other names in peculiar and distinct languages, spoken within a limited area. The Mangoes are round-headed, much branched trees of timber size, with bright glossy coriaceous leaves, which are persistent until displaced by new growth—complete denudation and rehabilitation taking place rapidly (say in one or two weeks, according to the season and locality). It grows wild in the Concan, Deccan, and other parts of India, and yields in quantity a gum or gum resin, which more or less gives its fruit a flavour of turpentine. Processes of cultivation have modified this objectionable flavour in various degrees, and resulted in an excellent garden variety, now cultivated about Bombay and Salsette, and popularly known as the Mazagon Mango (Mazagon is the gardening suburb of Bombay). In this variety the objectionable resinous taste has entirely disappeared; and, if there was anything like horticultural knowledge or activity in India, it would be diffused over the whole country, and possibly improved upon. The jungle or wild Mango is to its cultivated varieties pretty much as our indigenous Crab is to the best orchard Apples, and yet the wild fruit is largely consumed by the natives, and the excellent varieties sparingly cultivated even about centres of industry and civilisation. The possibilities of development of many other wild Indian fruits offer a hopeful field for residents in the country who may have facilities for experiment and patience allied to perseverance. I am not aware that the cultivation of the Mango has been attempted in England. No mere seedling is ever likely to attain a fruiting size, even in our large Palm houses; but I see no reason why, by judicious grafting with a view to precocity, small fruiting plants should not be obtained and grown as Oranges are, but in a somewhat higher temperature. As to species and varieties full information is unattainable. *M. sylvatica* is only noticed as growing near Kennery Caves (Salsette), yet the specific name indicates frequency. *M. oppositifolia* is said to have been introduced from Burmah to Bombay in 1833. At Sevanoor, in the southern Mahratta country, is cultivated a Mango bearing fruit of enormous size; it is possibly a distinct species, although considered only a variety of *M. indica*. Another Mango to be found in gardens at Hyderabad (Scinde) has the singularity of producing double and triple fruit. It is much to be regretted that educated natives of India devote themselves almost exclusively to politics and metaphysics. All they know of the natural history of their country is due to the science and indomitable energy of Europeans, who pursue their researches with great disadvantages in respect of climate, languages, time, extent of country, deficiency of means of communication, and utter apathy on the part of those able to supply local information. The flora of India is as yet barely sketched out and outlined. We have a right to expect from the natives we educate substantial help in extending research, observation, and record; but this they do not give, partially because the education given them is rather of a literary than of a scientific character, except as regards technical education for professions, the practice of which allows no leisure. In this country we have intelligent amateurs in every branch of science, who rejoice to be able to add to the general stock of knowledge, but in India amateur science seems to have no existence whatever. The fruits of India have a general character of insipidity, and are said to be in this respect inferior in flavour to similar ones grown in the West Indies; and that this is due to want of intelligent cultivation may at least be suspected by those who know anything about the state of horticulture in the East Indies. A common Swede Turnip is hardly a presentable delicacy for the dessert table, yet there is positively more of a fruit flavour in it than in any Pomegranate, Custard Apple, Pomelo, Sweet Orange, or Melon I ever tasted in India; ornamental they certainly are, and for want of something better people eat them, squashy, faint, and sickly though they be. The cultivated Mango is unique and exceptional as a real dessert fruit, with a luscious flavour, unlike any other, and not to be described. In the wild Mango the stringy fibres usurp most of the pericarp, tainting it with resin, and rendering separation difficult. In the Mazagon variety the fibres are a mere soft fringe around the stone, and the fruit may be eaten tidily if not "elegantly" by slicing off each side close to the stone, and using a spoon to

extract the pulp from each half. What little remains disposed in a ring round the flattened stone may be obtained, if desired, by simply holding the stone between the finger and thumb and biting it off; the fastidious might accomplish this also with a spoon, but less easily and perfectly. In any case a finger-glass is indispensable. The tub of water is an old standing joke of which the real "Bombay Duck," living *en garçon*, never tires, or loses an opportunity of displaying before the "Griffin" or Jungly-wallah, who, dropping in at the fruit season, must be taught the "correct" way of eating a Mango—which seems to be to make as much mess and fuss, and far more difficulty than a batch of children would over a scramble for treacled muffins. As to the flavour of a Mazagon Mango, there is, as I said before, a difficulty in describing it for want of a reference of comparison. A cynical friend from the West Indies said, disparagingly and with prejudice, that it was like "sweet pomatum;" and, taking colour and consistency into account, there was just a sufficiency of truth in the remark to make it an atrocious libel, but only appreciable by those who have eaten this delicious but peculiar fruit. This so-called Mazagon Mango is an old cultivated variety named Alphonso (in native parlance now Afus or Ahphoose), and its origin is referable to a time when the Portuguese possessed that good harbour (*bom bahia*), now Bombay. Its highest development of late years has been in the orchard of a Parsee, Framji Cowasji, at Powai in Salsette, from which specimens for transmission to European royalty are invariably selected. The Alphonso is also still cultivated at Goa, where, however, the conditions of soil, &c., are not so favourable. In conclusion, it may be of general interest to mention that many Persian gardeners, driven from Persia by the famine, fled to Bombay, and real or reputed skill has favoured their employment along the west coast. It remains to be seen how far they may be able to compete with the Chinese, who are at present the best gardeners in the Presidency. Applied science would rapidly effect a marvellous improvement in many indigenous fruits of India; but its application cannot be hoped for while, even in England, horticulture remains recognised merely as an art, and only botany is admitted as a science. Meanwhile some slight advance may result from comparison of the rule-of-thumbisms of Persians, Chinese, and other aliens, modified by experience; but if time be an object, aid must be sought from the scientific European, whose inductive reasoning is indispensable to consolidate results and secure advantage from the lengthened experience of practical men, as well as to direct future operations to successful results.

WASHINGTON TEASDALE, in *Field*.

[Another correspondent of the *Field* says:—"According to my personal experience, there is a much greater variety (in Lower Bengal, at least) of excellent table Mangoes than Mr. Teasdale would give us to understand. For many years I rented a house and large garden in the suburb of Sealdah, near Calcutta, on the very ground now occupied by the Eastern Railway establishment. I there had a double row of fine old Mango trees, some twenty or more in number, each of which was of a different variety from all the rest, and without exception the fruit of all was excellent. These Mangoes had a wide reputation among the native community, and people used to send from great distances to obtain grafts of them. Moreover, I had the trunks and larger boughs well stocked with epiphytic Orchids, for the flourishing growth of which the rough Mango bark is especially suitable, while the dense foliage above (comparable with that of a Portugal Laurel) screens them from the sun's rays in mid-day. The *Vandæ*, *Dendrobia*, *Acrides*, *Saccolabia*, and sundry other forms of tree Orchids, luxuriated under such conditions. I should say that the varieties of cultivated Mangoes are about as numerous as are those of Apples, and that the quality of them is much more difficult to judge of from external appearance. There are large and small, elongated and abbreviated, bright orange-coloured and green, with red in either case on the sunward side. A good Mango should be as little stringy as possible, and should not have too much of the turpentine flavour towards where it had been attached to the foot-stalk; a moderately aromatic savour there is by no means objectionable. They vary much in taste, some being of the flavour of honey, some of Pine-apple, some of Orange, while others have distinct flavours of their own. A

bad Mango is sometimes not very unlike a bad Carrot, but more commonly it has been aptly compared to 'taw and turpentine;' and, as before remarked, they are by no means easy to judge of from their external appearance. A variety known as the Dacca Mango bears a good reputation in Calcutta. Mr. Teasdale remarks that a Mango to be found in gardens at Hyderabad, Sindh, 'has the singularity of producing double and triple fruit.' This I have never seen; but it is not very rare for a Mango stone to contain two distinct coracles, which appear as separate plants, growing from each end of the 'stone,' when the latter opens out in the regular course of germination. Again, Mr. Teasdale remarks that he was 'not aware that the cultivation of the Mango has ever been attempted in England.' He may see them any year fruiting in the Botanical Society's garden in the Regent's Park; also (if I mistake not) at Kew, and at various private establishments. But it is not sufficiently understood in this country that the Mango blossom will not set in a moist atmosphere, and that to syringe it (as is commonly done in hothouses) is to destroy all chance of growing the fruit. In Bengal the air is usually very dry when the Mango blooms, and if a shower happens to fall at that time people are apt to remark, 'There goes our Mango crop for the season!' The Mango is a slow-growing tree, which in time attains to the size of our Oaks, so that it takes many years to establish a Mango orchard. But young trees grafted with the best sorts of Mangoes might be sent in any number to Jamaica or Porto Rico, or to St. Domingo, and again to certain sunny nooks in the Azores, and in time the fruit may come to be imported into this country as Oranges are imported now. The young unripe fruit, I may add, is largely consumed in India in tarts, &c., as unripe Gooseberries are here, and 'Mango fool' there takes the place of 'Gooseberry fool.' As a rule, the trees require to be thinned of their fruit to some extent, but I am unaware that the eventual quality of the ripe Mango has much to do with the quality of the acid unripe fruit. Mr. Teasdale asserts that 'a common Swede Turnip is hardly a presentable delicacy for the dessert table; yet there is,' he says, 'positively more of a fruit flavour in it than in any Pomegranate, Custard Apple, Pomelo, sweet Orange, or Melon I ever tasted in India; ornamental they certainly are, and, for want of something better, people eat them, squashy, faint, and sickly though they be.' Now a Pomegranate is a fruit that I never cared about, and only grew the splendid double-flowering variety as a garden ornament of no slight merit. The Custard Apple, as we get it in Bengal during the height of the rainy season, I regard as a most excellent and agreeably-flavoured fruit, and it is one of those which show no tendency to split up into varieties. Do not let the reader suppose that it is anything like an Apple, or anything like a custard; but we have to eat it with a spoon, each flake containing a seed, which we must be careful not to crush with the grinders. Next, the Pomelo or Shaddock, of which there are many varieties, good, bad, and indifferent—coarse-grained or delicately-grained; with immensely thick rind or with thin rind; with pulp white, amber-white, deep amber, orange-coloured, bright rose-red, or deep red; but all alike having the exquisitely-scented blossoms which diffuse their perfume far and wide. Well, I have often partaken of a really good Shaddock, and would relish one at this moment. Some of the finest which I ever tasted were brought from the Chusan Archipelago, at the time that Chusan was occupied by the British forces, when (according to a wretched wag) it was all 'Peking and Chusan' with us. The sweet Orange is, I admit, a poor insipid fruit, tasting like sugared water, and there is no such thing as peeling off the rind; but I hardly remember ever seeing it in Bengal, where we have Oranges of very fair quality (brought in abundance from Sylhet) to take its place. To the eastward, in Burmah, I found the 'sweet Orange,' or 'sweet Lime,' as it is more commonly termed, growing plentifully. Next, of the Melon tribe there are some excellent species and varieties in India, to those who know how to select them. Mr. Teasdale says nought about Bananas, or Plantains as they are always called in India, of which the choicer varieties are excellent—not exactly such as are sold in Covent Garden Market; nor of the Lichi, which Chinese fruit I used to grow to perfection in my garden at Sealdah."—Z.]

FRUITS OF THE SEASON.

PERMIT me to add a few more Pears to those of which some account was given last week (see p. 287).

Hazel.—The origin of this useful free-bearing Pear is involved in obscurity. It has been claimed by the French, Germans, and Dutch; but the predominant opinion is that it originated near the "fair city" of Oloeth, either at Mecklour or Kinnaul. As an ornamental tree for an avenue, or for grouping with other trees in a park or in woodland scenery, it is highly deserving of attention. It is so well known as a profitable market Pear, that I need say nothing of its merits in that respect.

Jacques Chamarest.—This is a nicely-perfumed fruit, which succeeds on the Quince. It is also like *Amélie Le Clerc*, a posthumous production of the same celebrated Pomologist. It fruited first in 1862, but was not sent out until 1861. I imported it in 1865.

Jersey Gratioli.—This is one of the most prolific of Pears, either on Pear or Quince stocks, and a fine market sort. The tree grows dwarf and compact.

Jalousie de Fontenay.—This is a pretty Pear, that does well upon the Quince, and bears abundantly.

Louise Bonne of Jersey.—Splendid fruit of this may often be got from trees on the Quince; indeed, I am of opinion that this fine Pear is most profitable and prolific when grown in that way. The ground on which it grows should be rich and moist, and the trees should be planted below the junction of the graft and stock, and they should be re-planted at least every four years.

Marie Louise d'Uccle.—This fine melting Pear has a considerable resemblance to *Marie Louise*, but is more regular in form and always has the stalk set obliquely against the swollen end of the fruit. The *Marie Louise* is very irregular in form, and the two trees are very different. The present sort is an enormous bearer, which the old *Marie* is not, at least at an early age; besides it will not grow at all upon the Quince. I am particular about this, as some will have it that there is no difference between the two. The old *Marie Louise* will not be fit to gather for at least a fortnight yet, whilst this has had to be gathered on account of its having commenced to fall from the trees.

Madame Treyve.—This is a large and excellent Pear, of a short pyriform shape and with a thin olive-yellow skin, dotted and spotted with fawn, and tinged with red on the sunny side. The flesh is white, fine, and very melting, and the juice very abundant, sugary, acidulated, and deliciously perfumed. It bears freely on the Quince, and owing to the weight of the fruit should be grown as an espalier in preference to a standard. It was first raised by M. Treyve, of Trevoux, France, with whom it first fruited in 1858.

Peach.—This is a very free-bearing and good Pear, although not first-rate. It grows freely and bears well upon the Quince. It was raised by one of the most successful pomologists in Belgium—Major Esperen.

Roux Carcas.—This may be described as a mouthful of sugar. The tree is an enormous bearer, but it does not succeed well upon the Quince, and if grown upon the Pear stock the fruit loses much of its goodness. When double grafted, it does very well. It is very suitable for small gardens, as the tree is dwarf.

Merriott, Crekerne, Somerset.

JOHN SCOTT.

USING STONES IN POTTING.

HAVE any of your readers ever used stones purposely in potting such things as Vines and Pines? It is the custom to pick these carefully out of the compost before using it; and I confess, myself, to a prejudice against them hitherto, though I am not prepared, I must admit, to give a good reason for the same. I am led to ask the above question from an idea which occurred to me the other day when examining the roots of a Pine-apple plant which had been turned out of the pot. As has often been observed in the case of potted plants, the roots were all at the side of the pot. Just to see how far they had availed themselves of the body of soil between the stem and the pot, I poked the soil out at the bottom of the ball from the top. So few were the roots, comparatively, that this could be done easily, leaving just the skeleton of the ball—a thick mat, which had formed at the sides of the pot, and inside nothing but a few strong roots radiating from the stem of the plant to the outside of the ball, where they had congregated and thickened, without the least disposition to turn back and take advantage of the bulk of rich soil they had left behind. I estimated that the roots had availed themselves of about one-third or one-half of the soil in the 12-inch pot, living principally—after they had eaten the strength out of this—upon the nourishment supplied in the waterings. No doubt it was observations of this kind which led to the practice of shifting plants forward by inches, in order that the roots might be compelled to eat their way through in

a regular manner; and there is reason in the practice, though in the case of the Pine-apple the many-shift system is not a good one. Still, if by any other practice we could produce the same results it would certainly be advantageous. If a good plant can be grown in a 12-inch pot upon only one-half the diet supplied, it would doubtless be a much better specimen if it could be induced to take it all; and a 10 or 12-inch pot contains no more soil than a strong Pine plant requires, but it is unable to avail itself of the store under the circumstances, and it is therefore lost. It is the same with pot Vines and other plants, but to a less extent, perhaps; for the Pine has a very bad habit of warping its roots round the sides of the pot, especially when it is potted loosely. It would appear, therefore, that to make the roots occupy the soil in the pot regularly as they progress, they must be obstructed in their passage. Hard potting will do this to a great extent, but it is not entirely effectual in preventing the majority of the roots from establishing themselves at the side of the pot. It seems to me, therefore, that a fair proportion of stones among the soil would effectually bar their direct progress. Round boulders would be too bulky, but flat slaty stones, introduced vertically here and there between the stem and the pot at potting time, would necessarily cause the roots to break up into branchlets and seek a more roundabout way to their ultimate destination—utilising, at the same time, the body of soil at their disposal, which they would otherwise have disregarded. Supposing we could accomplish the end in view, it seems certain that less-sized pots would do, and two pots of a given size would give better results. I have frequently noticed, as others must have done, that the ball of an old Pine plant, when squeezed with the foot, would burst its skin, and the contents, soil and bones, scarcely touched with a root, would fall out in much the same condition as when the plant was first potted, except that the bones in the soil were just in that state in which the roots like to find them for immediate use.—J. S., in "The Gardener."

THE FRUIT CROP ON THE CONTINENT.

THE German Pomological Society, which embraces also the German parts of Switzerland, Austria, and Hungary, have just published the result of an inquiry into the condition of the fruit crop this season. In doing this the society have divided all the country into fifty-six districts, the reports from which are as follows:—

Districts.			Districts.		
APPLES,	in	1 very good crop.	PLUMS,	in	2 very good crop.
"	5	good crop.	"	5	good crop.
"	21	middling crop.	"	13	middling crop.
"	27	scarce.	"	22	scarce.
"	2	none.	"	14	none.
PEARS,	in	2 good crop.	WALNUTS,	in	1 good crop.
"	22	middling crop.	"	4	middling crop.
"	31	scarce.	"	18	scarce.
"	1	none.	"	33	none.

North Switzerland has hardly any fruit crop at all; and, on the whole, it is evident that our continental brethren have even a worse crop than we. Indeed, so very scanty is it, that the cause of such a general bad crop will form the subject of a discussion in the Pomological Congress which will be held at Vienna next October. G. W.

Figs.—Many persons who have room for a Fig tree, and wish to plant one, are anxious to know the best variety to cultivate. Having fruited a large collection—in fact, every kind I could get—I have no hesitation in saying the best sort for culture, under glass, is *Bourjassotte grise*. The *White Marseilles*, or, as it is often called, *Raby Castle*, is often recommended for no other reason, I think, than because it is a well-known old kind. Almost any Fig, when in fine condition—i.e., when thoroughly ripe, and with a drop of honey hanging from its eye—is good; but I think a poor Fig a very poor fruit indeed, and I often see *White Marseilles* in this condition. Now, the great advantage of the *Bourjassotte grise* is, that not only is it the best of all Figs, but it is nearly always good; in fact, I do not remember to have tasted a bad one yet. There are many good Figs in cultivation; but some of your readers, who have, perhaps, room for only one, will do well to plant this variety.—J. R. PEARSON, *Chilwell*.

Fruits of La Palma, South Spain.—This place is not without its charms. Thanks to the admirable system of irrigation introduced by the Moors, the sun, which is strong enough to have parched the soil into a desert, quickens it into the most luxuriant fertility. It almost improves on Douglas Jerrold's witty exaggeration, and scarcely requires "to be tickled with a hoe to laugh with a harvest." Grapes, Figs, Olives, Pomegranates abound everywhere in profusion, to say nothing of such fruits as Peaches, Melons, Apples, Pears, Tomatoes, and the red Pimiento, in appearance something like a Capsicum, and here a favourite and staple article of food.



THE GARDENS OF ANCIENT GREECE.

THE first European garden of which we have any account is the celebrated "Garden of Alcinoüs," described by Homer in the seventh book of the *Odyssey*. It is beside the question to object that the great epic is merely a poetic fiction, that it is very doubtful whether the Isle of Scheria is truly represented by the more modern Corcyra or Corfu, and that the luxurious Phæacians and their king are most probably entirely fabulous personages. The description of this famous garden unquestionably reproduces some scene or combination of scenes familiar to the writer, and, although brief, it is valuable to us as exhibiting somewhat of the condition of gardening at so early a period as the time of Homer—nearly 1,000 years B.C. After describing the palace and some of the employments of its inmates, the poet proceeds as follows:—"And outside the palace, near the gates, was a great garden (*ὄρχαρος*) of four acres, surrounded by a hedge. There grew many old and flourishing trees—gloriously-fruited Pears, Pomegranates, and Apples, sweet Figs, and evergreen Olives. The fruit of these never fails in winter or in summer; but ever, as the zephyr breathes, some are growing, while others ripening fall. Pear ripens after Pear, and Apple after Apple; Grape after Grape, and Fig after Fig. In one part, the fruitful soil is being planted; in another, where a well-exposed spot throws its level to the sun, the vintagers are at work; while elsewhere the Grapes are being trodden in the wine-press. Some of the Vines have just gone out of flower, and on others the berries are beginning to turn. Close to the hedges trim beds of every kind (*κομμηταὶ πρασιναὶ παντοδαταί*) may be seen, making all bright around. There are two fountains, one of which serves to irrigate the entire garden; the waters of the other flow towards the lofty palace, and from this the citizens are not debarred to supply themselves. Such were the splendidly-exuberant gifts of Nature bestowed by the gods on King Alcinoüs." It will be seen from the foregoing description that the "Garden of Alcinoüs" was, properly speaking, a fruit-garden or orchard, no flowers being mentioned, although it is highly probable that the "trim beds of every kind, making all bright around," were not wholly occupied with vegetables only. We must not, however, expect to hear of much in the way of ornamental gardening amid the simplicity of the heroic ages, for, as Bacon well remarks, "When ages grow to elegance and civility, men come to build stately sooner than to garden finely, as if gardening were the greatest perfection." But even when the Greeks had attained their meridian of "elegance and civility," they were far more distinguished for architectural than for horticultural skill. In fact, we have no grounds for supposing that their gardening ever advanced much beyond the production of Figs, Olives, vegetables, and pot-herbs, which formed their chief articles of food. The Athenians, however, afford us the first instance of public parks



maintained by the State for the recreation of the citizens. The first of these was originally an extensive tract of waste and marshy ground, which its owner, Academos, bequeathed to the city, on condition that a gymnasium should be established upon it, where the young men might practise all kinds of athletic exercises. This was done, and the gymnasium was called Academia, or the Academy, in honour of the founder. At a later period (about 460 B.C.) Cimon, son of the great Miltiades, being archon or chief magistrate, caused the whole of the ground to be drained, and planted it with avenues of Plane trees and groves of Olives, and adorned it with statues and other works of art, when it became the favourite promenade of the Athenians. Plato used to meet and converse with his disciples here, and, after his death, his followers, continuing to assemble in the same place, established the school of philosophy known as the Academy. Another celebrated public park at Athens was the Lyceum, which also contained gymnasia, and was the retreat of the Peripatetic School of Philosophy founded by Aristotle. It was also the resort of the most distinguished warriors, statesmen, poets, orators, and artists, who met to witness the athletic sports of the youths, and to converse on such subjects as possessed a common interest for them. Here political questions were discussed, and literary productions were criticised; the poet recited his latest composition, and the philosopher expounded the distinguishing points of his system. We do not know to what extent the culture of flowers was carried in these Athenian parks; probably they were not entirely neglected, but the principal feature or chief attraction in both seems to have been their quiet shady walks and groves, from which an occasional glimpse might be had of the not distant Parthenon towering above the city on the summit of the Acropolis. It was to these "groves of Academus" that the youthful Horace (47 B.C.) was sent by his wise and affectionate father to finish his education, and in them, as he tells us in his touching little sketch of autobiography, he first learned to distinguish the mathematical difference between a straight line and a curved one, and began his search after truth amid their leafy shades.

That the science of horticulture owes so little to the ancient Greeks may perhaps be accounted for by the poorness of their soil, and the small amount of territory and natural resources enjoyed by their somewhat numerous cities. Something may also be laid to the account of their democratic institutions, which, for the most part, forbade the existence of a class of wealthy patrons, whose taste would seek a gratification in the creation of splendidly laid-out gardens and pleasure-grounds. The genius of the people seems to have delighted more in those works of sculpture and architecture for which they stand unrivalled, and the military education of the gymnasium may, moreover, have inspired somewhat of contempt for the mere gardener's art. We may regret this, perhaps; but, considering how much we owe to ancient Greece in other respects, we can well afford any loss which we may have sustained in not being able to include her in the list of our instructors in horticulture.

W. M.

BIRDS AND INSECTS.*

THAT we may the better understand the importance of birds to mankind, let us examine the lives and habits of these little creatures, and the position assigned to them in the marvellous economy of Nature. A simple view of their organisation and mode of life will at once show us that the orders of birds, whose daily and principal food is drawn chiefly, if not entirely, from the animal world, are those which exist both in the greatest numbers and the greatest variety. In Germany and Switzerland 150 different species are known, some non-migratory, others more or less nomadic. The most numerous order of all is that of the Insectivora, which includes the warbler (*Sylvia orphæa*), the yellow wren (*Sylvia trochilus*), the stone-chat (*Saxicola rubicola*), the lark (*Alauda*), the Alpine warbler (*Accentor alpinus*), the white wagtail (*Motacilla*), the fieldlark (*Anthus arboreus*), the great titmouse (*Parus major*), the spotted flycatcher (*Muscicapa grisola*), the thrush (*Turdus musicus*), the great cinereous shrike (*Lanius excubitor*)—the order numbering altogether more than eighty species. Few of these eat vegetable food, by far the larger number living exclusively on insects. The next most numerous

order—that of the Palmipedes—of which there are about forty species (some of which are rarely seen in these countries), also lives for the most part on animal food. Swans do not disdain it; geese are the only members of the order which steadily refuse it. The Grallæ, which form a group of about thirty species, are almost entirely dependent on animal food. Birds of prey—Rapaces—numbering as many species as the preceding order, of course feed exclusively on animals; whilst of the family of the Gallinæ, in which there are about twenty known species, the following members prefer animal food:—the water rail (*Rallus aquaticus*), the common coot (*Fulica atra*), the partridge (*Perdix*), wood-grouse (*Tetrao*), bustard (*Otis tarda*), do so at certain periods. The Zygodactyli, consisting of twelve species, are very eager after animalculæ; the European nuthatch (*Sitta europæa*), the wryneck (*Yunx torquilla*), and possibly the woodpecker (*Picus*) and cuckoo (*Cucullus canorus*), being the only ones which in autumn eat berries and seeds. The order of Granivora, which includes the families of the chaffinch (*Fringilla cœlebs*), the house-sparrow (*Fringilla domestica*), the serinfinch (*Fringilla serinus*), the linnet (*Fringilla linota*), the bunting (*Emberiza*), the hawfinch (*Coccothraustes*)—in all about thirty species—have not a full right to the name which their order bears, since all the buntings, all the chaffinches, and all the sparrows consume during the summer as much animal as vegetable matter, if not more. The only birds of this order which feed exclusively on vegetables are the pigeon tribe, including about five species.

Thus one order only, comprising but one single family, together with a few scanty families taken from other orders, forming when put together, but one-twelfth or one-thirteenth part of our birds, constitutes the total of those which exclusively consume vegetable food. There is also another fact not devoid of interest to the agriculturist, viz., that the Granivora principally choose and prefer the seeds of obnoxious plants, of which they destroy vast quantities.

This rapid survey is suggestive of highly important considerations. It brings under our notice the great and invariable harmony existing in Nature in the distribution of the earth's produce; for when we come to consider the sort of animal food that birds make use of, we cannot deny that they tend to the preservation of the vegetable kingdom. In effect, all the Insectivora, the Zygodactyli, the Grallæ, nearly all the Palmipedes, the species of Gallinæ and of Corvi, a part of the Granivora, and even the greater number of the Rapaces, either feed exclusively or partially on those classes of animals, such as beetles, caterpillars, larvae, flies, Neuroptera, Hymenoptera, spiders, Crustacea, worms, and Mollusca, which, by their extraordinary powers of reproduction, threaten, and sometimes more than threaten, to destroy the vegetation existing on the earth's surface. Many of the larger birds feed also on mice and reptiles, which, though insectivorous themselves, would end in being troublesome through their numbers. Truly Providence does not, to our mind, always make use of the simplest and shortest way of realising its object; but its views are themselves so varied, that innumerable agents are constantly at work to secure the end. It unfolds itself in a thousand different shapes, and displays its wealth in apparently contradictory contrasts. Thus in the insect world we meet an assigned limit, combined with infinite variety of form and immense profusion of species. Like birds and mammalia, it possesses its herbivora and carnivora most widely distributed. Where vegetation is most luxuriant, we find more Coleoptera than Phaneroptera; and amongst these beetles the Herbivora predominate. In mountainous districts Phaneroptera surpass the Coleoptera in numbers; whilst in the higher regions of the Alps, these last disappear long before the former; and amongst the insects and spiders which exist beyond the limits of eternal snow, the Carnivora are more numerous than the Herbivora, this arrangement being evidently for the express purpose of protecting these last and scanty remnants of vegetation.

The vegetable world is the base on which the higher orders of creation are built up. Without plants, animals cannot exist; for even the Carnivora are indirectly dependant on vegetation. If Providence is pleased to produce innumerable hosts and varieties of the smaller animals, it imposes, as it were, a certain limit on itself, by proportionately and gradually placing, where necessary, numbers of Carnivora; and if the wide-spread tribe of birds be destined to feed on animals of an inferior order, it thus provides a means for the maintenance of a perfect balance between the protectors and destroyers of vegetation. Birds are Nature's soldiers, and keep in subjection the inferior animals. If some amongst them constitute an excellent part of the food of man, furnish him with eggs, with useful feathers, or with a good manure, all these services are scarcely worthy of notice when compared with their labours in the destruction of insects. For this especial duty the most essential of their organs have been adapted—their sight is piercing, and even the very smallest amongst them possess the most extraordinary powers of digestion—whilst their great activity and lightness enable them to exercise their calling

*Extracts from a pamphlet by Frederic de Tschudi, President of the Agricultural Society of Canton St. Gall, Switzerland. Translated from the second French edition, by Henry L. B. Ibbetson.

incessantly and where most required. The reproductive powers of birds and their instinct of migration are also due to the office imposed upon them. When in the north the insect world drops into its wintry repose and sleeps under layers of deep snow, then most of the bird tribe fly to the south, there to perform the same duties; whilst those which remain all the year round in one place gather up the larvæ, the eggs, the nests of insects, the few flies or spiders which may be tempted out of their holes by a sun-ray, and the Coleoptera which gnaw the barks of trees.

In these days it would almost appear as if the great and important services rendered by birds were insufficient for the purpose; for complaints are heard from Germany and Switzerland that they are invaded by swarms of those varieties of destructive insects which are habitually seen in small numbers only. They lay waste green meadows, vegetable-gardens, crops of wheat or Flax, fruit trees, and forests; they torment alike animals and men, take us by surprise, and destroy our prospects. Amongst the beetles, the cockchafer is our most declared enemy. When in its last stage of development it destroys the blossoms and leaves of trees; but, still more dangerous in its larva state, it gnaws the roots of plants, and, appearing in alarming masses, often devastates whole countries. This beetle might be made of use, in more ways than one. In the first place, its carcass is an active manure, a good food for fowls, or, if well dried, even for cows, whose milk it will then increase. Some chemists have succeeded in extracting from them a good brown colour and a good Prussian blue; much oil, too, can be got out of them, sixteen measures of cockchafers giving six measures of oil. A clear gas and a fair sort of cart-grease may also be manufactured from them; whilst cooks even turn them into a nourishing and savoury soup, or a sweetmeat for dessert.

All this is doubtless very well in its way, but if we do not steadily persevere in our labour of limiting, to the utmost of our power, the number of cockchafers, they would, in the long run, ravage so many lands, that neither hens, cows, cooks, nor chemists could by any possible means exist. Other destructive beetles are the *Acanthopoda*, the *Astynomus ædilis*, the *Anthonomus*, the *Bostrichus typographus*, which in 1780 and the following years, destroyed more than a million of Fir-trees in the Hartz Mountains and in Switzerland, and more recently committed other awful depredations; and lastly the *Hydrophilus atei*, a very dangerous insect for preserved fish-ponds. Several species of butterflies, otherwise so innocent, belong, when in the caterpillar state, to the class of pernicious articulated animals; the principal of these are the *Bombyx processionea*, the *Phalena bombyx*, the *Pieris*, the *Lasiocampa*, the *Phalena*, the *Neustria*, and the *Tinea*. As for the other sorts of inferior insects, such as the *Gryllotalpa*, the *Aphis*, the grasshopper, the ant, different species of the gadfly, wasps, flies, worms, and snails, it is almost needless to speak of them; they are but too well known as plagues. The *Acridium migratorium* has already penetrated into Southern Switzerland, and we are forced to come to the conclusion, from observations carefully made on different spots, that the number of destructive insects in general is gradually augmenting. This arises evidently from the diminution of insectivorous birds, which is in exact proportion to the increase of insects; and if we look into the causes of this diminution, we shall find more than one, both in this and other lands. Generally speaking, the progressive cultivation of the earth is not very favourable to animals living in freedom. It has driven the fallow deer from our woods; the elk, the lynx, the wolf, the bear, the ibex, from our mountains; the beaver from our rivers. But it has been especially hostile to birds; the hospitable thickets diminish yearly; man forces onward the limits of his domain; he masters the as yet uncultivated soil, and draws from it rich harvests. Large tracts of woodland are cleared to supply the wants of an increasing population and the heavy demands of industry. The large trees formerly left standing in the midst of a field, in which numberless small animals found a refuge, are made away with, or replaced sometimes by the small fruit tree. Long rows of hedges, the hiding place of a whole host of birds, meet with the like fate; and these, too, were of other use, for they attracted quantities of caterpillars, which fed on their green leaves, and thus spared the orchards. All the little nooks so useful to birds, both as hatching-places and hunting-grounds, disappear one by one. In woods, the mistake of cutting down right and left old trees full of small holes, has been, unfortunately, understood too late, and thereby numbers of the best Insectivora have been deprived of commodious nesting-places: unavailing regrets from those incessantly exposed to the hawks of wood-insects will follow on the disappearance, for years to come, of their best and most active allies of the forest. United, the causes we have just referred to would alone be sufficient to explain the heavy and sensible diminution of small birds; but there are others of considerable consequence, for instance, the frequent netting and shooting by man, and the destruction of nests

by children and cats. In some countries no nest is out of reach, and none are left unplundered; and it is especially the most useful destroyers of insects which are plundered in quantities, such as the titmouse, the chaffinch, the warbler, and the redbreast. Nightingales in some places have become so very scarce, that in spots formerly enlivened by their song every spring, they have not been heard for more than ten years. Here and there the absurd ordinances, enjoining every government keeper to destroy woodpeckers and cuckoos, and even offering a premium for every head brought in, are still the law of the land.

But the cause which exercises a still more fatal influence on the diminution of our most useful birds of passage, is the exterminatory hunt they are subjected to on the part of the Italians. It is a well-known fact that at the period of their spring migration, and still more in autumn, Italians are seized with a mania for killing small birds. Men of all ages and conditions, *nobili*, merchants, priests, artisans, and peasants, all abandon their daily tasks, to attack, like banditti, the troops of passing visitors. By the river-side, in the fields, all around is heard the report of fire-arms; nets are laid, traps set, twigs covered with bird-lime hang on every bush. On every hill adapted to the purpose, is placed a sort of trap (*roccolo*), full of owls and sparrow-hawks, to attract and slaughter the little strangers. The objects of their pursuit are not those birds which in other countries are usually chosen for purposes of sport; on the contrary, they select the little Insectivora, the singing-birds, and particularly the nightingales. Swallows even—birds generally protected by man—are taken in quantities, and often in a most cruel manner. A small insect or feather is attached to a hook, held by a long thread, and allowed to float in the air, to attract the swallow as it skims past. To form some idea of the slaughter which, for weeks together, is the chief delight of the population of Italy, it is sufficient to mention that in one district on the shores of the Lago Maggiore, the number of small birds annually destroyed amounts to between 60,000 and 70,000; and that in Lombardy, in one single *roccolo*, 15,000 birds are often captured daily. In the neighbourhood of Bergamo, Verona, and Brescia, several millions of birds are slaughtered every autumn, and the exterminatory fever rages quite as violently in the more southern districts. In Sicily, for instance, during ten days in autumn, nearly 1,000,000 larks arrive daily on the coast, and immediately on their appearance are met by a continuous file-firing from hundreds of sportsmen, who bring them down in thousands.

This purely Italian mania has penetrated into Switzerland, in the Canton Ticino, where no prohibitory laws exist to prevent the increasing fondness for the sport; the inhabitants entrap on the frontiers of their canton, on the St. Gothard and the Grison mountains, as many of the songsters, when they attempt to migrate, as they possibly can. But we on this side the Alps especially suffer from such wanton proceedings, and we witness the consequences in our fields and woods. We cannot prevent the Italians from indulging in their absurd and barbarous amusements, but we can lessen the evil in some degree; and it would be but consistent with the proverbial good sense of us Germans if we were to protect all the bird tribe with a solicitude proportionate to the mad attacks made upon them southwards, and thus in some degree reinstate the order of Nature, and aid in re-establishing the necessary balance between the insect world and its enemies. We have two ways of accomplishing our object—by favouring in divers manners the propagation and increase of our most useful non-migratory birds, and by affording good asylums and hearty protection to birds of passage during their summer sojourn.

It is, however, preposterous to depend entirely on artificial means for a complete restoration of Nature's laws; the force of reproduction is so prodigious amongst inferior animals, that man will never be enabled to combat alone successfully their periodic invasions. On the borders of the Rhine, the *Atelabus bacchus* damages the Vineyards, and the *Anthonomus* and *Phalena* the fruit-trees, to an extent which may be valued at several hundred thousand thalers (3s. each) annually, without a remedy against such havoc having as yet been found. Near Torgau, several thousand thalers have been annually expended on the forest of Annaburg, for the destruction of caterpillars and chafers, in the attempt to save the trees from utter ruin. During the year 1837, an area of 860 acres of Fir-forest was entirely stripped of its leaves by the caterpillars of the *Noctua*, and Government paid more than 1,000 thalers for the destruction of 94,000,000 of the above dangerous insects. The havoc these insects cause is almost incredible. Some time ago caterpillars devoured all the Grass over immense districts in America, and it was found necessary to import hay from England. The Herbivora caterpillars laid bare the plains of Lesch, near Augsburg, gnawing the roots of every plant, and destroying the herbage growing for miles around several villages. The caterpillars of the *Noctua plinipeda* will in a few weeks' time destroy 300 acres

of woodland; and in the Marches of Brandenburg, in two years, they devastated a seventh part of all the Government forests. In Franconia, the caterpillars of the Bombyx and Lasiocampa, during the year 1839, completely devoured the produce of 2,200 acres of Government forest, in spite of the strenuous efforts made to combat the evil. A success was obtained in the woods of Stralsund, where in 1840 Government, at an expense of about 3,200 thalers, collected 1,000 pounds' weight, that is, more than 633,000,000 of the eggs of the Bombyx. The vegetable-consuming caterpillar occasionally appears in such numbers, that a tubful of them may soon be collected. They arrive in a field, quickly destroy the chief part of the crop, and then journey on, it being impossible to arrest their progress. It has been noticed in the Duchy of Hesse, that these insects principally laid waste those spots where, from the want of trees, the aggregation of singing-birds is prevented; and here all human effects at prevention have been found totally unavailing.

For about half a century the culture of fruit trees has been steadily increasing in Wurtemberg, so that now it brings in a revenue of 1,700,000 florins (£141,750) annually, though a great part of the crop is yearly devoured by caterpillars. Formerly but little notice was taken of these invaders, but latterly they have so much increased that many cultivators have been discouraged from continuing their occupation. Government has ordered all the trees to be cleansed, both in spring and autumn, imposing penalties for disobedience, but the desired result has not yet been obtained. If Nature did not interpose, man would of necessity succumb; but these insects are pursued by other enemies who become the allies of man. The Ichneumon pricks the caterpillar to death, the Limax sucks out its vital organs, beetles eat them, principally the pernicious Processionæa caterpillar; and the shrewmouse, the hedgehog, the mole, the lizard, the frog, the toad, and the bat are all excellent insect-hunters. Nature, however, has shown most solicitude for us by appointing as the food most sought for by birds, eggs of moths, larvæ, caterpillars, butterflies, flies, gnats, aphids, ants, snails, worms, &c., and by giving to each species its assigned duty and place in the work of destruction. Each has its appointed spot, either in the wood, field, bush, meadow, garden, or vineyard, on the rocks, or by the river-side; some attack one particular class of insects, others another; some are clever at pecking them off leaves or branchlet, others snatch them up as they fly through the air; some unearth them, others extract them from betwixt bark slits, or pierce the wood that shelters them. Each sort of bird is expressly formed for the task it is intended it should perform, in the varied shape of the beak, feet, and wings; and each little workman finds it necessary for its sustenance to swallow daily an amount of matter equal to the weight of its own body.

In order duly to appreciate the immensity of the work undertaken by birds, we will just notice a few facts brought under our observation. In a greenhouse, three full-grown Rose bushes were covered by about 2,000 of the aphids; a titmouse (*Parus palustris*) was introduced, and allowed to roam about in freedom, and in the space of a few hours the whole multitude of insects were consumed, and the plants thoroughly cleansed. The titmouse fortunately multiplies considerably; they render great service, chiefly to shrubs and fruit-trees, eating up millions of caterpillar-eggs. Everyone is aware of the enormous quantities of eggs moths lay at one time, some species 150, and others 500, 600, and even 800. The Noctua, for example, lays about 600 eggs twice each summer. The titmouse, like most other birds, does not attack the hairy caterpillar, but it daily swallows thousands of its eggs. Constantly in full activity, both in summer and winter, they are ever rummaging about trees, sometimes in small groups, and sometimes accompanied by the European nuthatch (*Sitta europæa*), the common creeper (*Certhia familiaris*), and the gold-crested wren (*Motacilla regulus*). They creep into rolled-up leaves, under branches and trunks of decayed trees, and diligently make away with every insect-egg they may chance to stumble upon. Count Casimir Woziczke mentions a conclusive example of the signal services these birds render to our gardens:—"During the year 1848 an enormous quantity of the Bombyx dispar (the well-known enemy of gardens, and which also commits serious depredations in woods) had devoured the foliage of my trees, so that they were quite bare. I discovered in autumn millions of eggs enveloped in a silky sort of covering, and attached to the trunks and branches. I had them removed at a considerable expense, but soon became aware that the hand of man was powerless to ward off the infliction, and resigned myself to the loss of my best trees. But on the approach of winter several bands of the titmouse and the wren (*Troglodytes*) paid daily visits to my trees, and soon the caterpillar eggs were in a fair way of diminution. At spring-time about twenty couple of the titmouse built their nests in my garden; the ensuing summer the depredations of the caterpillars were greatly lessened, and in 1850 my little winged gardeners had

so well cleansed all my trees, that, thanks to their labour, I had the satisfaction of seeing them in full leaf the whole of the summer."

The indefatigable wren, which remains with us during the winter, is of very great use, for its appetite equals its activity. They must perpetually be swallowing something, and accustom their young to follow their example in gluttony, by feeding them on an average, thirty-six times every hour with insects' eggs, larvæ, &c. A hungry redstart (*Phœnicura titithys*) captured in a room, during the space of an hour, 600 flies; and if this little bird hunts but for two or three hours a-day, we may guess the number of its prey. The swallow and the martin (*Cypselus*) in the daytime, and the European goat-sucker (*Caprimulgus europæus*) during the night, capture swarms of gnats; the chaffinch, the jay, the jackdaw, (*Corvus monedula*), devour the Lasiocampa and Noctua. Even sparrows may be included in the list of useful birds, notwithstanding the damage they cause at times to the orchard or corn-field, because they feed their young (which have very good appetites) exclusively upon larvæ, grasshoppers, caterpillars, beetles, worms, or ants; and both old and young at the end of summer are constantly filling their crops with the seeds of weeds. A couple of sparrows will consume in food for their young about 3,000 insects weekly, each parent bringing a billful thirty times an hour. These services are worth a few Cherries. The hedge-sparrow does not, moreover, eat Cherries, and a small number of these birds will soon cleanse many shrubs and Rose trees from the aphids.

(To be continued.)

Cultivated Plants, and the Time of their Introduction.

—The following list contains the date of introduction of some of the foreign plants which are now familiar in our gardens and conservatories. The common Acacia tree, a native of North America, was first cultivated by John Tradescant, sen., in 1640. The French and African Marygold were introduced by John Gerard, author of the "Herbal," in 1596. The Almond tree, from Barbary, is first mentioned by Lobelius in 1570. A few years later, in 1596, Gerard cultivated the common Pomegranate. The dwarf Pomegranate of the West Indies did not appear in our gardens before 1730. To Gerard we also owe the first introduction of the Yucca gloriosa, and the African Aloe. The Agave americana was not cultivated for a century later. The Apple and Pear, Plum, and Cherry, are native plants, but the Quince came from Austria at the close of the seventeenth century. The Cucumber is a native, but was first cultivated in the sixteenth century, as was the common Melon. Asparagus, Cabbage, or Brassica oleracea, in all its varieties of White, Red, Savoy, Cauliflower, Broccoli; Turnips, or Brassica rapa, Beet, Hops, Horse-radish, Celery, Onions, Leeks, Radishes, Mustard, Cress, Lettuce, are all indigenous plants. The Potato, as is well known, came from America; the Marrowfat or common garden Pea from the south of Europe, as did the globe Artichoke, the Bean from Egypt, the China Orange from India in 1629, the Lemon from Asia in 1648, the Jerusalem Artichoke from Brazil in 1617, the Coffee plant in 1696, the Tea plant about 1768, Parsley from Sardinia in 1551; and to foreign countries we are also indebted for almost all spices and condiments except mustard. Garden Balsam, a native of the East Indies, was introduced by Gerard in 1596. The Plantain tree was first cultivated at Hampton Court in 1690, and the Banana in 1731. The Cedar of Lebanon, now so common, was not grown in England before 1683, and is first mentioned in a letter of Ray of that year. The common white Larch had been introduced in 1629, and the Norway Spruce Fir in 1739, first in Chelsea Gardens. The Canadian or white Spruce Fir was cultivated in 1700 by Bishop Compton. The Cypress tree of southern Europe was cultivated in the garden of Sion House in 1551; the white Cedar, or arborvitæ-leaved Cypress, in 1736. The common Hollyhock came from China at the end of the sixteenth century. Maize or Indian corn had been grown about the middle of that century. To Gerard we owe the common Syringa from the south of Europe. The Sensitive plant, Mimosa pudica, from Brazil, is first mentioned in 1733 by Dr. Houston, who also introduced more than one species of Passion Flower from the West Indies. The Laurel or common sweet Bay came in 1562 from Italy, the Laurestine in 1596 from the south of Europe. The Aucuba japonica, now universal in our shrubberies, was first introduced from Japan in 1783 by Mr. John Grafer. The female plant, with its splendid berries, has only been introduced during the last few years, the Aucuba being till then regarded as a monœcious plant. We might extend this list largely, but enough has been noted to show how recent have been many of the additions to our gardens and forests, and how small the variety of species known before the days of Gerard's "Herbal," or even of Evelyn's "Sylva." A more complete list of the now common trees and flowers, with the time and circumstances of their introduction to England, would be an interesting compilation.—*Leisure Hour.*

THE FLOWER GARDEN.

MICHAELMAS DAISIES.

AMONG the chief ornaments of our flower borders and shrubberies in the late summer or autumn months, the best species and varieties of the genus *Aster*, or Michaelmas Daisy, hold a prominent place. Of this genus there are a great many species in cultivation in botanic gardens; but as many of these are worthless, and as many of the finest may now be seen in flower in our best collections, we are induced to give a description of some of the most ornamental kinds recently observed by us flowering in the collections round London. The plants are of the most easy culture, thriving either on cold clayey soils or in those of sandy loam, and all of them are readily increased by division. The various kinds are adapted for nearly any position in the mixed border. The taller and more vigorous kinds do capitally among shrubberies or associated with other strong-growing plants in semi-wild spots; while some of them are fitting subjects for a choice rockery. We will commence with *Aster Amellus*, a distinct species, which grows from 18 inches to 2 feet in height, and produces flowers of a fine deep blue colour, about an inch and a half in diameter. *A. cordifolius* is also a good



Aster grandiflorus.

kind, from 3 to 4 feet high, with large heart-shaped radical leaves, and is now flowering at Kew. The flowers are small, whitish, and are borne in crowded racemes. *Aster dumosus* is a dwarf bushy kind, forming a compact tuft from 9 to 15 inches high, the flowers of which are of a pale lilac-blue, and are borne in dense clusters.

Aster elegans is a tall and graceful species from 3 to 5 feet high, producing corymbs of small whitish flowers. *A. grandiflorus*, of which we give an illustration, is a distinct and handsome species, with stiff wiry stems about 3 feet high. It has large violet-blue flowers borne singly on the ends of the branches, but as it blooms only during the later months of the year, from October to Christmas, it is only seen to perfection on warm soils, or when trained against a low wall. One of the best of the whole genus, in our opinion, is the Smooth Aster (*A. lœvis*), a medium-sized kind, which makes a nice bush about 2 feet high, and of which a good specimen may now be seen at Kew, thickly covered with nicely formed bright blue flowers. *A. longifolius* is another handsome kind; there are several forms of it, and the most worthy of culture is that called by Mr. Niven *longifolius formosus*. This kind grows from 1 to 2½ feet high, and produces a dense mass of bright

rose-purple coloured flowers. It is now very attractive in most collections of these plants. *A. multiflorus* grows from 3 to 4 feet high, and produces an abundance of pretty small Daisy-like blooms. The kind more frequently met with in gardens than any other is the New England Aster (*A. Novæ Angliæ*), which is a vigorous-growing species, often attaining a height of from 5 to 6 feet. The flowers of this species are violet-purple, but there is a good rose-coloured variety. It makes a capital shrubby plant.

The Pyrenean Aster (*A. pyrenæus*), which has just done flowering, is a kind that is well worthy of culture. It forms a neat-growing plant from 2 to 3 feet high, and has large lilac-blue flowers. *A. Reevesii* is a dwarf-growing kind, about 9 inches high, with slender branching stems that are thickly studded with small Daisy-like white flowers. The silky-leaved *Aster sericeus* is another very pretty kind, that grows about 2 feet high, and produces deep blue flowers. Probably the most attractive kind to be seen in the collection at Kew at the present time is *A. Shortii*. This plant is about 3 feet high, and has an abundance of pale purplish-blue flowers, borne in long racemose panicles. *A. turbinellus* is another very attractive plant, good specimens of which may also now be seen at Kew. It grows about 3 feet high, and produces numerous smooth thread-like branchlets, on which are borne quantities of pretty mauve-coloured flowers from August until the middle of October. The last on our list is *A. versicolor*, a neat dwarf species, with showy flowers, that are at first white, changing to pink or purple, or a combination of both. There are several other kinds, valuable as border-plants, that are often included in the genus *Galatella*. Of these *cana* and *dracunculoides* are now attractively in bloom. Before closing our remarks on the Asters, we would recommend others that do not, like those mentioned above, bloom in the autumn, but are attractive in the earlier summer months. We allude to such as *alpinus* and *altaicus*, both of which are dwarf-growing kinds, valuable either for rockwork or the front of a mixed border. T. S.

THE FRINGED GENTIAN.

THIS beautiful flower, which adorns the moist rocks near Niagara Falls and many other parts of North America, is thus spoken of by a correspondent of that excellent journal, *The Albany Cultivator*:—Almost all autumnal flowers are clad in gaily coloured robes, and delight us with the brilliancy of their hues. But the Fringed Gentian is unlike most of its companions, and does not command our attention by its brightness. It attracts by the exquisite beauty of its form, and the perfect blue of its flowers, which are of a shade to be compared with nothing else. I never weary with looking at the delicate fringing of its petals, and its rare colouring, so combined that they charm the most fastidious lover of floral beauty. It is not a rare plant, as it is found in low marshy ground in many of the northern and western states; but it has a peculiar way of closing up its petals, except at full noontide, and thus it escapes the notice of many flower hunters. A large plant of it, with all its numerous branches adorned by lovely flowers, is worth even a tiresome walk to behold. There are various wild flowers, like the *Epigæa repens* and the Fringed Gentian, which are rarely seen under cultivation; and although some skilful florists have been able to introduce them into their gardens, I have always failed. The Fringed Gentian is supposed to scatter its seeds upon the snow; they make an early start in the spring, and the plants, which are so located that they can survive the heat of the summer, come into blossom in September. In the northern and western states, there are some eight or nine species of Gentians, but none of them can approach the Fringed Gentian in colouring or beauty of form.

Good Border Flowers.—I have just laid out the shrubbery round my house in the country. I have a good mixture of flowering shrubs, evergreens, and trees, but no flowers. I do not like annuals. I want to plant the borders of the shrubberies with good (old-fashioned or otherwise) perennial hardy border flowers. Will you do the favour to give me some names of such plants in your next paper? I have waded through the seed lists I have, but I am not sufficiently well acquainted with flowers to select good useful plants for my purpose. The height I should prefer would be between 1 and 3 feet.—W. T. [The following will suit you well:—*Achillea Eupatorium*, *A. Ptarmica* (fl. pl.), *A. apennina*, *A. coronaria*, *A. fulgens*, *A. japonica*, *A. sylvestris*, *Aster Amellus*, *A. pyrenæus*, *A. turbinellus*, *A. versicolor*, *Campanula* in variety, *Coreopsis lanceolata*,

Coronilla montana, *Delphinium* in variety, *Dielytra spectabilis*, *Echinops ruthenicus*, *Erigeron speciosus*, *Erodium Manescavi*, *Eryngium alpinum*, *E. amethystinum*, *Funkia Sieboldi*, *Geranium Lambertianum*, *G. sanguineum*, *G. striatum*, *Helleborus niger* and its varieties, *Hemerocallis flava*, *H. graminea*, *Iris* in variety, *Lathyrus grandiflorus*, *L. latifolius*, *Lupinus polyphyllus*, *Lythrum Salicaria roseum*, *Monarda didyma*, *Oenothera macrocarpa*, *O. marginata*, *O. speciosa*, *Orobis vernus*, *Paeonia* in variety, *Papaver bracteatum*, *Phlox* *Herba-venti*, *Phlox* in varieties, *Physostegia virginiana*, *Pyrethrum carneum*, *Rudbeckia hirta*, *Saponaria ocymoides*, *Spiraea palmata*, *S. venusta*, *Statice latifolia*, *Symphytum bohemicum*, *S. caucasicum*, *Tritomas*, and *Veronica*s in variety.]

Gowan *versus* **Daisy**.—Mr. Gillbanks has taken much trouble to prove (p. 245) that the Gowan is not the Scotch for Daisy. Now I am a native of Dumfriesshire, and I am also well acquainted with the Ayrshire dialect, which scarcely differs from that of Dumfriesshire, and I assert without hesitation that Gowan is the common name for Daisy in these counties, as it is in all the southern Scottish counties, as far as my experience goes. Let Mr. Gillbanks, if he happens to be in Dumfriesshire or Ayrshire, ask the first rustic he meets to "gather him a handful o' Gowans," and a thousand to one he will bring him Daisies, unless he asks for yellow Gowans, when, probably he will be supplied with Buttercups, or it may be, but not so likely, with Dandelions; but the Daisy is the Gowan. As a schoolboy I never knew it by any other name. It is new to me also, as it must be to hundreds of the readers of Burns, to know that the poet meant a plant comparatively rare, and not the Daisy when he sang of pulling "the Gowans fine," *alias* "gaudy," as Mr. Gillbanks translates it, but wrongly. "Fine laddie" is a common Scotch expression for a good, nice, or quiet well-behaved boy; it would certainly not be applied to a "gaudy" boy. In fact, "fine" is applied in the south of Scotland to anything that is of good quality, as fine crops, fine Turnips, fine Potatoes, and even to tools, as fine spade, fine knife, &c., and fine Gowans I have heard applied to the Daisy often enough. "Braw" is perhaps the best Scotch equivalent for "gaudy," as braw man, braw dress, or braw flower. Daisy, properly speaking, is the English for Gowan, and in rustic localities in Scotland, it is seldom or never used, and some children who know what a Gowan is well enough would not understand what Daisy meant.—"MEET ME IN THE GOWANY LEA."

—I cannot corroborate Mr. Gillbanks's statements with reference to his definition of the word Gowan, as used in Scotland. I am a native of Inverness, and was brought up in Morayshire; but in neither county have I heard the word Gowan applied to any plant except the Daisy. In Inverness-shire, Gaelic and English are both spoken, and what is known as "braid Scotch" has not yet found a footing there—a circumstance which accounts for the omission in that district of the word Gowan. In Moray, on the other hand—and, in fact, in Banff, Aberdeen, and the neighbouring counties, where the word Gowan is in every one's mouth—I can positively assert that it is the recognised name for the Daisy only; and, if ever used with reference to any other plant, that plant is merely said to be "like a Gowan." *Ranunculus*, and similar yellow flowers, are always regarded as Buttercups. The expression "pu'd the Gowans fine," as used by Burns, is regarded by all Scotchmen as referring to the Daisy only; and I do not think that any Scotchman, either at home or abroad, would for a moment apply to it any other meaning.—W. FALCONER.

—Your correspondent, Mr. Jackson Gillbanks (p. 245), has got into a Scotch mist as regards the Gowan, which is the Scotch name for Daisy, and a name by which that "wee crimson-tipped flower" is known throughout Scotland and the north of England. If Mr. Gillbanks will procure the Kilmarnock edition of Burns, he will there find his address not to the Daisy, but to the Gowan; or, if he wishes to be more enlightened on Scotch terms, get Burns by Marr & Son, Glasgow, which contains explanatory notes by Chambers, Hogg, Motherwell, Wilson, Gilbert Burns, &c. The same edition contains a complete marginal glossary. I may add that Mr. Grindon (p. 223) is perfectly correct as regards the Ox-eye Daisy (*Chrysanthemum leucanthemum*) being called the Horse Gowan. It is so named by all the common people in rural districts throughout the northern counties of Scotland, viz., Banff, Aberdeen, Elgin, Kincardine, Forfar, Fife, and Perth.—W. COLLIE.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Pyrethrum uliginosum.—This is now everywhere in flower; it is 8 feet in height and 5 feet in width. The blossoms are pure white, except the disc, which is pale yellow, and they measure 4 inches in diameter.

Colchicum Byzantinum.—This is one of the most beautiful and also one of the most floriferous plants now in bloom. Old masses of lovely soft lilac-mauve flowers, feathered with white, are a sight which it is never too long to admire. On a small patch of two or three bulbs in my garden I counted this morning forty-three blooms.—H. HABER CREWE, *Dryden-Beauchamp Rectory, Tring*.

THE KITCHEN GARDEN.

MUSHROOMS.

THESE are grown in large quantities in ridges out of doors in our London market-gardens; nevertheless, they form one of the most uncertain of crops. Sometimes the beds produce abundantly, and the grower realises a handsome profit; at other times there are scarcely enough to pay for the gathering and marketing, independent of the great expense, time, and labour expended in preparing the ridges. A moderately dry and frosty season is favourable to their development, but a foggy and wet one is sure destruction to out-of-door Mushroom crops. The first set of ridges is formed in August, the main lot in September, and some in October, and they begin to yield Mushrooms nine or ten weeks after being formed, and continue, under favourable circumstances, in good bearing condition until April, and some of them even until May. In ungenial seasons, however, they seldom do much good after March. In forming the ridges, the ground is marked off into 8 feet spaces, and along the centre of each space a convex ridge of half-rotten manure is firmly built. In this state the ridges are allowed to remain until fermentation takes place, and until the heat subsides sufficiently for the beds to be safely spawned. When these conditions have been induced, and the spawn has been inserted, the ridges are covered over with 2 inches, or thereabouts, deep of soil, and are allowed to remain in that state for a time, when the whole is covered over with dry litter, for the purpose of retaining the heat. It is dangerous to cover the beds too soon, as over-heating would destroy the spawn, and consequently ruin the crop. In severe weather it is sometimes necessary to increase the amount of covering of litter, and also to cover the ridges with mats, so as to throw off the rain. The mats are held in position by means of pegs, stones, boards, &c. This mode of cultivating Mushrooms is now practised to a large extent in the western suburban market-gardens. Sometimes, but rarely, beds may be observed in full bearing in midsummer, but Mushrooms are produced with much greater difficulty at that season. W. F.

Cutting and Drying Herbs.—Mostly all herbs should be cut and dried before the middle or end of September, not so much for the sake of the herbs to be dried as for the roots left in the ground. There are many kinds of herbs, such as Mint, Sage, Thyme, &c., which perish during winter if they are not cut in time to allow the plants to make a short growth before the growing season comes to an end. In this locality Sage and Thyme invariably perish if cut indiscriminately, so as to have the wood bare after September. Herbs must not be dried, as some do, before a kitchen fire! Those who buy bottled Parsley and such like should smell it first. The best way to dry herbs is to spread them out in a dry airy room, or loft, turning them over frequently to prevent the leaves getting mouldy. In damp, dull weather, a dry Vinery or Peach house is a good place, hanging the bundles over the wires. The object in all cases should be to dry them gradually, and the leaves should retain their colour to a considerable extent, and adhere firmly to the branch. When they crumple up in the hand, they have been subjected too much to the kitchen-fire process, which destroys their virtue. After being thoroughly dried, hang them up in a dry shed.—S.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

A Curious Fact in Melon Culture.—This summer I grew half a dozen plants in pots, at the top of our Pine stove, of my new seedling Melon, named Gilbert's Green Flesh; when, strange to say, they were beautifully netted, while out of the same packet of seed, grown in the Melon house, they were only slightly netted. Have Melons in pots a tendency to become more netted than when grown in a border?—R. GILBERT.

Large Mushrooms.—A Mushroom that monopolised much room in the dish when brought to table, was gathered about a fortnight since in the Lichfield neighbourhood by a relation of mine. The Mushroom measured 11½ inches in diameter, and 37 inches in circumference, and weighed 11 lbs. 11 oz. The stalk was 7 inches long, and 5½ inches round. In my own neighbourhood Mushrooms have been very scarce this season.—F. H. GREENSTREET, *in Felt*.

Manures and Weeds.—Suitable food for crops enables them to conquer the weeds. In regard to Clover, it was found that when the land was wholly unmanured the weeds formed 57 per cent. of the entire yield; but that the application of gypsum reduced the proportion of weeds to 2 per cent. Nitrogenous manures had very slight effect, and phosphatic manures but little more. We must not from this, however, consider gypsum as an antidote to weeds in general, since it is a specific manure for Clover, and gives it a power to struggle successfully with the weeds, and crowd them out.

THE HOUSEHOLD.

AN IMPROVED MODE OF PACKING APPLES.

D. B. WIER describes, in the *Prairie Farmer*, an Apple box which he has found well adapted to shipping early Apples, fully ripe, and vastly better than barrels, which require the Apples to be hard and green to carry well. To those who have trees of early sorts, from which they expect to market fruit next summer, we would recommend this box. The following is Mr. Wier's description:—I experimented considerably with different packages last summer, and watched the market carefully, trying to find out what would best fill the want, and am perfectly convinced that I have found as good a package as I want for this purpose, and believed to be the cheapest, best, and most fair package for all kinds of Apples, both for seller and consumer, and hope my brother fruit growers will help me in bringing it into general use. I would make them to hold a very large bushel instead of a peck; 2,150 cubic inches is the standard bushel; the Apple box should have a capacity of 2,560 cubic inches, inside measure, and never be reduced one millionth of an inch, and this standard size should be kept up. The box that I shall use in the future will be 22 inches long, 16 wide, 8 inches deep, outside measure, or when made of the material I think best, have an inside measurement, of 20 inches by 16 inches, by 8 inches. The box is formed of three pieces 8 by 16 inches of Tulip, Poplar, or other lumber three-fourths of an inch thick—I am inclined to think that five-eighths of an inch would be heavy enough—for the two ends and middle division, two pieces 22 inches long by 8 inches wide for the sides of the box, and four pieces 16 inches long and 7½ inches wide for the cover and bottom of the box; these last pieces to be three-sixteenths of an inch thick of Cottonwood, Basswood, or white Elm. I think Cottonwood the best. This box will give the buyer a full bushel of Apples; it is of a size easily handled, good to pack in, so that the fruit will show well; anyone can make it, and what is best of all, the packages cost less than half what barrels for the same amount of fruit would, and with it we need have no fear of coopers' strikes, coopers' unions, or coopers' extortion. In it the cheapest kinds of timber can be used, and timber that will always remain cheap. These boxes in "flat"—all ready to put together, can be bought in quantity for 19s. per 100 at present; add freight, nails and putting together, the cost should certainly not exceed fourpence per box, at which price no one can grumble at it as a "gift box," yet I have found it profitable to have them returned, and have used them as many as five times over for near shipments; and even these are not all the advantages of this package; we can ship fruit much nearer ripe (mellow) in them. Barrels are very unhandy and expensive things to haul, without a wagon expressly adapted for them, and they are unwieldy to handle; with the boxes we can get a load of Apples on almost any kind of a vehicle, and it is a most excellent package in which to store winter fruit. It is exceedingly handy with slight modification (and holds out) for handling fruit both in and out of the orchard.

"Canned" Tomatoes.—Select fair ripe Tomatoes, and pour boiling water over them to remove the skins. Peel them carefully, cutting out all hard spots, and slice thin. Put into a large porcelain kettle—iron or tin are not desirable on account of the acid contained in the Tomato. Let them boil hard, and then skim off the crust that rises. After boiling for half an hour or so, season slightly with salt and pepper. The glass cans should be placed upon several thicknesses of cotton cloth, thoroughly wet in cold water; and, for convenience, they can be placed in a large tin pan, and brought to the stove or range, and filled from the kettle while still boiling hard over the fire. Place a silver tablespoon in each jar before filling it up, and it will prevent the glass from cracking upon receiving the boiling Tomato. It requires two persons to can Tomatoes or fruit, for success depends upon the rapidity with which the operation is performed. While one fills the jars, the other can put on the covers instantly, and screw them tightly in place. Now take a thick towel and stand each jar upon its head. This operation will determine whether they are air-tight. Let them stand until entirely cool; then put in a dark, dry closet. From these cans Tomatoes, as good as those gathered in the autumn in the garden, may be taken any day in the year.

Chowchow.—Take half a bushel of green Tomatoes, one dozen Onions, one dozen green peppers, all chopped fine, and one pint of salt. Let them stand together over night. Drain off the brine and cover with good vinegar. Let it cook slowly an hour, then place it in a jar. Take two pounds of sugar, two table-spoonfuls of Cinnamon and allspice, one table-spoonful each of Cloves and pepper, half a cup of ground Mustard, one pint of grated Horseradish, and vinegar enough to mix them. Boil well and mix with the ingredients in the jar. It is ready for use in two days.

SOILS, MANURES, &c.

CHARCOAL AS A FERTILISER.

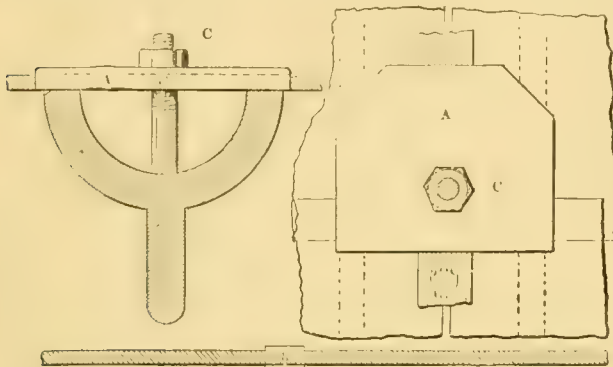
I WANT some treatise on the virtue, chemical properties, and proper application of charcoal as applied to land. My soil is light sandy loam, and I can procure 100 loads of charcoal dust at little or no expense, except drawing one and a half miles.—THOMAS ROGERS.

Answer by Professor S. W. Johnson in *New York Tribune*:—There is good proof that charcoal has an excellent effect on light land deficient in attractiveness for moisture, especially in dry seasons. This is due to its great porosity and absorbent power for vapour of water. As is well known, charcoal takes up a large amount of water when kept in a cool damp cellar—becomes, in fact, so wet that it is difficult to set it on fire. On a soil already hygroscopic from presence of clay or humus, or in wet seasons, it has, of course, no good effect from this quality. On a heavy clay, which is unfavourable to vegetation because of its compactness and slow penetrability by water, charcoal powder, like any non-adhesive dust, separates the clay particles, prevents their cohesion where it intervenes, and thus tends to make the soil more open, more friable, and more early, promotes drainage, and sets in train a long series of changes for the better. Charcoal strewn on the surface of light-coloured soil, so as to blacken it, enables the soil to become warmed under the sun's rays more rapidly and more highly than would be the case otherwise. This fact may partly account for the good effect reported of it in cold climates. Charcoal has been reputed to act as a fertiliser because of its absorbent power for ammonia. It does, in fact, condense in its pores fifty to one hundred times its bulk of ammonia gas when its pores are perfectly free from air moisture and all other gases, and when the ammonia gas is also unmixed with other gases. But these conditions never exist in nature, and the fact is that charcoal exposed to the air never contains or absorbs any important amount of ammonia, and does not fertilise by acting as a means of collecting and storing this gas. Charcoal is a powerful oxidising agent, and this quality may not unlikely come into play usefully when it is mixed with the soil. Dr. Stenhouse was the first to show that the offensive gases which escape from putrefying animal matters are deodorised and destroyed when made to pass a layer of charcoal dust, and that the result is brought about by the oxygen gas condensed in the pores of the charcoal. A dead rat, nicely buried in a cigar box so as to be surrounded at all points by an inch of charcoal powder, decays to bone and fur without manifesting any odour of putrefaction, so that it might stand on a parlour table and not reveal its contents to the most sensitive nostrils. The gaseous products of decay under such conditions are carbonic acid, ammonia, and water, or the same that would result were the ordinary effluvia of putrefying flesh burned in a furnace. The soil often, if not always, contains nitrogen in combination with some form of humus, which is inert, or at least not immediately available as food to crops. Charcoal, we should anticipate, would hasten or set up oxidation of these matters, and might liberate a portion of this inactive nitrogen, in the form of ammonia or of nitrates, and thus enhance the fertility of the soil. This is, however, but a speculation, a bit of theory, and while probable enough to warrant investigation, must not be accepted as a fact until it has been proved to be such. As a direct fertiliser, i.e., by virtue of anything it can yield of its own substance to crops, charcoal cannot be regarded as of much value. It contains, of course, if it has not been washed by water, the ash elements of the wood from which it has been made, and when applied in large quantity the potash, lime, &c., which it carries upon the land may easily produce a striking effect upon poor soil. This kind of effect cannot last more than a single season, and on a soil in fairly good condition would commonly make no show. From these considerations we conclude that, while charcoal (unless, as may often happen, it is mixed with a good deal of wood-ashes) is not of much value as a fertilizer directly, it is a valuable amendment to soils which are dry from their coarse, sandy texture, or are wet from consisting of too tenacious clay.

Production of Olive Oil at Nice.—At Nice the Olive tree is planted over an extent of 15,000 acres, and the produce, in a fairly good year, is 180,000 to 200,000 gallons. This is, perhaps, the richest product of the district, certainly that which obtains the most consideration from the inhabitants. There are many varieties cultivated, each having some peculiar quality; the growth, however, of this tree is very slow, and no crop of any value can be expected until the tree has attained the age of twenty years. Some of the trees are very old, and the greater part were planted during the latter half of last century.

TUCK'S PATENT HORTICULTURAL BUILDINGS.

THIS newly patented form of construction for all kinds of horticultural buildings combines many advantages with great simplicity. The sash bars are made of rolled wrought iron, similar to the section shown in the accompanying sketch, a form which, by the union of the tie iron with the circular flange, makes a bar of great strength and lightness, and gives at the same time a channel which carries off all water that may happen to get between the panes of glass, and a great portion, if not all, of the internal drip down into the gutter. The panes of glass, which may be of any desired size, are laid on these bars, and held in position by means of a lead clip, fastened to the sash bar by a brass screw-pin and nut. Lead is used here as it gives the expansion required without having recourse to India-rubber, felt, or springs, all of which get sooner or later out of order and require replenishing. Between each pane of glass are fixed strips of lead of the H form, especially rolled for the purpose, thus making a perfectly tight joint, and at the same time leaving the glass free in every way for expansion or contraction. The sash bars may be bent to any angle, and houses may be made without having the glass lapped, the panes fitting one edge to one flat surface, giving a circular form of house with flat



The Channelled Sash Bar. Lead Connection between the Panes of Glass.
A. A. The Lead Clip.—B. The Lead Connection.—C. The Metal Nut and Screw.—The dotted lines show the wrought-iron channelled sash bar.

panes of glass, and doing away with what becomes in time in all houses an unsightly receptacle of dirt. This mode of construction is carried out by Messrs. Tuck and Pike, of Bath.

Sewage Gardening.—An enterprising cultivator has lately undertaken to introduce the sewage system into North Germany, and has leased for thirty years, at £1,200 a year, 2,000 acres of the sandy waste which lies between the Baltic and the port of Dantzic. On this hitherto barren spot—which has never been used since Napoleon surveyed it with the visionary design of erecting a Polish Liverpool at the mouth of the Vistula—he is now carrying on operations vigorously. Two hundred acres have been already levelled off, supplied with sewage in the liquid form, and put into root and garden crops. The success of the experiment will no doubt cause its extension to the other towns along this dreary coast, whose bad sanitary condition has been enhanced by the level character of the country round them, the unproductive character of which makes the experiment peculiarly suitable.

Autumn Leaves.—There is a beauty about autumn leaves that is often overlooked, though it is well worth preserving. To have them in their best condition they should be dried as rapidly as possible after being gathered, or they will soon lose their brilliant colours. They may be placed between the leaves of some book that is of little value, or between folds of paper, that which is porous and unglazed being the best. The drying is sometimes hastened by passing a warm flat-iron over the paper. Change the paper every day until the leaves are quite dry, and then keep them between the leaves of a book, or in folds of paper, under a moderate weight, until wanted for use. They may be tastefully arranged upon white cardboard, in the form of wreaths, bouquets, &c., or they may be used to decorate lamp-shades, to surround pictures, &c. The leaves are first carefully oiled with boiled linseed oil, upon the upper side only. A little oil is applied with a bit of cloth or a brush, and the surplus wiped off with a soft cloth. This increases the brilliancy of the colours, as well as their permanency. They are afterwards fixed in their places by means of strong mucilage.

WORK FOR THE WEEK.
PRIVATE GARDENS.

The Flower Garden.—Every effort to preserve order and neatness must now be used in this department; fallen leaves must be daily swept up, and lawns and walks must be kept in good repair; flower beds must of necessity be broken up; but, where the plants are not required to be kept for another year, decayed leaves and flowers may be stripped off them, in order to give them a good appearance for as long a time as possible. Herbaceous plants, such as Asters, Rudbeckias, and Helianthemums are still yielding good crops of flowers, and Chrysanthemums are on the eve of opening their flower-buds. Sweet Peas, Nasturtiums, Tropæolum canariense, and China Roses too are luxuriant and flowering well, but, with exception of the Roses, one night's frost would prove fatal to all that are not sheltered. As soon as the flower-beds and borders are emptied, manure them if necessary, and trench and lay up roughly those that are to remain unfilled till next summer; such, however, as are intended to be planted with spring-flowering plants should receive immediate attention.

Bedding Plants.—Of such as are to be preserved through the winter, lift all that can be spared as early as possible, at the same time carefully preserving their roots. The latter, as well as any straggling shoots, will require shortening; and, if Pelargoniums, they should be divested of a goodly portion of their leaves. Pot them immediately in rather light soil, and place them in frames or greenhouses. It is advisable to lift all variegated and delicate kinds of Pelargoniums early, in order that they may make a few fresh roots before severe weather sets in. The very finest kinds should be potted singly, in comparatively small pots; the others may be placed two or three in a pot, or in boxes, to be separated and potted singly early in spring. Old plants may be lifted, dressed, and planted very thickly under stages in cool houses, where they can be kept quite dry during the winter. In spring, if transferred to a more favourable situation, such as to frames, boxes, or pots, or even if planted along the base of a wall, well sheltered, and facing the south, with some sprays of dried Broom or Spruce branches in front of them, they will form good subjects for the adornment of shrubbery or herbaceous borders, and the best of them will be available for bedding purposes. The winter stock of Heliotropes, Coleuses, Iresines, Ageratums, and Verbenas, should consist of well-rooted cuttings, for the most part propagated during the past three months. In case of any deficiency, however, lift the stubbiest of the old plants, pot them, and keep them in a genial, rather close, temperature for a short time. Calceolarias may be the last to be taken in, but they should be moved before they are likely to be destroyed by frost. Have a cold frame with turf sides prepared for them, and in it place some light mould on a dry and well-drained bottom; then lift the plants with good balls of soil attached to them, and plant them firmly in the frame, far enough apart to keep them from touching one another. They should be covered with sashes for a few days, but afterwards freely exposed on every favourable day, and tilted up on all others, except when wet or frosty. Pelargoniums, Salvias, Verbenas, Tropæolums, Gazanias, Centaureas, and Ageratums, may be wintered in houses or pits that are light and airy, free from drip, naturally dry, and that are kept above 36° in winter. Coleuses, Iresines, and Alternantheras, enjoy a temperature not under 43°; Heliotropes prefer a minimum of 40°. The variegated Mesembryanthemum cordifolium thrives well in a cool pit, an intermediate house, or a stove, and the generality of succulents prefer a temperature not under 35°. Vineries and Peach-houses make good wintering houses. In damp localities lift the variegated Polemonium cæruleum; pot it, and keep it indoors till spring, when it may be divided and transferred to the open ground. Sow a few seeds of the Golden Feverfew in pots or pans, and keep them in cold frames for next summer's use. Cut over the stems of Dahlias as soon as they are injured by frost, and lift the roots on a dry day. Before storing them away, clear the soil from amongst the tubers with a wooden peg, and lay them on a walk or hard surface exposed to the sun to dry; then store them in a dry airy shed or cellar. As soon as Cannas are cut down, spread some litter or leaves over the bed, and over that lay the Canna tops. For convenience sake, and also for purposes of propagation, it may be advisable to lift them, when they may be stored like Dahlias, or placed amongst dry mould or sand in a cellar, greenhouse, or shed. Salvia roots, and also those of Erythrinias, may be treated in the same way. Gladioli may be cut over about 8 or 10 inches above the ground, lifted, and hung up in bundles like Onions till spring.

Spring Bedding.—As soon as the present temporary occupants of the flower-garden can be got cleared off, add a dressing of loam or decayed leaf-soil to the beds, which double dig or trench, and mark off the pattern for the spring-flowering plants. Some of the beds may be entirely filled with bulbs, and others with early

blooming herbaceous plants, whilst some of them may consist of a mixture of both. Hyacinths, Tulips, Narcissi, Crocuses, Snowdrops, Dog's-Tooth Violets, Fritillarias, and the Scillas, particularly *S. amœna*, *bifolia*, and *sibirica*, may be effectively employed in spring gardens, and with a little discrimination as to their character, height, time of flowering, and colour, a continuous display may be maintained for many weeks together. Daisies and hardy Sedums make good edgings, and Pansies and bedding Violas, *Alyssum*, perennial and annual Iberises, Aubrietias, Hepaticas, *Saponaria ocyroides*, *Anemones*, and many kinds of annuals, make a fine display in masses or lines. Some of the variegated Grasses and old plants of Golden Feverfew may also be advantageously employed in this way. In planting bulbs, sprinkle a little sharp sand under and over them, and in the case of Hyacinths and Tulips the holes may be made tolerably large, and a handful of rich compost placed under each bulb. If this were applied all over the bed, the soil would be too rich for next year's bedding plants.

Soil.—Have in readiness, under cover, a heap of soil moderately dry, and in good useable condition for potting such plants from the flower garden as are intended to be preserved through the winter. The soils for the different kinds of plants might differ a little, therefore each sort should be kept separately, and mixed as required. Loam, which is of most importance, may consist of decayed turf and loam edgings, thoroughly decayed weeds, or good but not inert garden soil. Leaf-mould, peat, road-grit, thoroughly decayed manure, and white and river sand, will all be found useful where the variety of plants is great.

The Shrubbery.—Continue the transplanting of evergreens, but do not prune them till spring. Prune deciduous trees if necessary, however, as soon as the leaves have fallen, when they may also be safely transplanted. If increase of the stock be an object, select the best of the prunings for cuttings, which may either be inserted in rows at once, or tied in bundles and their bases inserted in the ground, where they may remain till time can be spared to plant them. Some of them may be used as scions for grafting in spring. Conifers may now be transplanted, if carefully done, with comparative safety. Hollies may be left till April. Such very hardy coniferous plants, however, as Scotch Fir, Larch, &c., may be planted any time from the end of October till April; indeed, in large forests, these are commonly being planted throughout the winter season. Cuttings and grafted plants in pots, whether deciduous or evergreen, should be placed in frames until spring, when they may be planted in the open ground. Use the best part of the prunings of evergreens as cuttings, either for forming independent plants or for stocks for grafting. Have a good supply of stocks for spring and next year's work.

Roses.—China Roses are still flowering freely, as are also some Tea-scented and other kinds. Cuttings of all sorts may still be inserted under hand-lights in sheltered borders, there to remain till spring, with free ventilation during the winter season. After the middle of the month Rose planting may begin, but pruning should be delayed till spring. Introduce into a very gentle heat Roses in pots that have made good roots, and that were pruned back in August; these will begin flowering in December. Keep the remainder of the pot Roses in cool frames or pits, and prune them and force them as may be required to keep up a succession of flowers.

Pines.—Place the fruiting plants in the warmest end of the pit or in a compartment by themselves where they may enjoy a higher temperature than those that are at rest, or the succession plants, which should have a night heat of from 60° to 65° with 10° or 15° more for bottom-heat. Fruiting plants however, ought to have a bottom-heat of 85°, and a night atmospheric temperature of from 70° to 75°, allowing a rise of 10° or 15° with sun-heat. Do not permit plants swelling their fruits to lack water at the roots, but keep the succession plants rather dry; in fact if they are deeply and firmly plunged in cocoa-nut fibre, tan, or leaves they will require hardly any water. See to the bottom-heat and plunging material and have all in good working order before winter sets in. If the plunging material be old and cold, remove it entirely or partly, and fill up with new, healthy, and well worked stuff, filling the pits therewith so that the plants may be as near the glass as possible. Pot and start suckers as they are obtained, and if the stock of them be short, preserve the stocks from which the ripe fruit is cut; shorten their leaves a little and they will throw up a supply.

Vines.—The vines in the earliest Vineries should by this time be pruned, stripped of loose bark, and painted with some compound for the destruction and prevention of insects. A quarter of a pound of soft-soap mixed with a gallon of water, to which a little tobacco-water has been added, and also flowers of sulphur, quicklime clay in sufficient quantity to give it the consistency of paint, will be found to be a good application. If red spider was on the Vines last summer

scrub them with a brush and soap and water before applying the mixture, and remove the surface soil about the necks of the plants. Thoroughly wash the woodwork and walls of these early Vineries with water, in which soft-soap has been dissolved, and also the glass, but it must be cleansed with pure water afterwards; and see that all joints of ventilators are in good workable order, the glass mended and drip-proof, and the hot-water apparatus ready for use. The outside borders should have been covered with shutters, tarpaulin, roofing tiles, spare lights, or any material capable of throwing off cold autumn rains, and thus retaining for a longer period than usual the natural heat of the soil. Pot Vines are perhaps the most convenient for early forcing; but some prefer permanently planted ones. If pot Vines be used, see that the wood is thoroughly ripened, and that they have been timely pruned, and place some styptic over the wounds to prevent bleeding. If manure or leaves be employed to produce heat, and to plunge the pots in, the result will be better than that obtained from hot-water pipes only. A night temperature of about 55° will be required to start the plants into growth at this season. By means of fire heat and ventilation at the same time get late Grapes and Vines well ripened, and prune them as soon as the wood is ripe.

BOILER INCRUSTATIONS.

By W. H. WATSON, Braystones.

ALL natural waters contain more or less solid matter. The purest form of natural water is rain, but some rains contain much more solid or mineral matter than others; this, according to the purity of the atmosphere through which the rain has fallen; for instance, I analysed a sample of rain which had fallen probably about a mile from the sea, and I found therein 3·2 grains solid matter per gallon, while rain which had fallen about 50 yards from the sea gave 11·971 grains solid matter per gallon, a difference of 8·771 grains, it being due undoubtedly to spray from the sea; for, while the former contained chlorine equal to 1·03 grains chloride, calculated as chloride of sodium, the latter contained chlorine equal to 10·92 chloride—a difference of about 9·89, or nearly 10 grains of chloride per gallon. The chief part of the solid matter contained in water, other than rain water, is acquired by contact with the surface of the earth, and by percolation through its rocks and soils. The solid matter found in water is, then, such as is in the earth capable of being dissolved out, as chloride of sodium and magnesium, sulphate of lime, carbonate of lime and magnesium, and occasionally a little sulphate of soda. In addition to the above, we find in river water insoluble matter in suspension. This often consists of clay, silicious matter, organic matter, and sometimes oxide of iron. River water is generally freer from solid matter than spring water; but it, like all other water, is liable to change from natural causes. The water of the Ehen, a fishing river running from Enderdale Lake, in Cumberland, contains 7·1 grains solid matter per gallon, while many rivers contain only from 2 to 4 grains per gallon. The 7·1 grains of solid matter present in the river Ehen water consists of carbonate of lime, sulphate of lime, chloride of sodium, with a slight trace of chloride of magnesium, and a little sulphate of soda. In addition to the above, the water contains 1·6 grains of insoluble matter in suspension, consisting of sand, organic matter, and oxide of iron. Spring water often contains from 10 to 15 grains solid matter per gallon; 50 grains are sometimes present, but such a case is exceptional. Carbonate of lime and magnesia are barely soluble in water, but in water holding in solution free carbonic acid they are considerably so; consequently, then, the water of springs and wells contains more of the carbonates than the water of rivers, lakes, &c., owing to the spontaneous evolution of their solvent (carbonic acid) on exposure to air, light, and heat. When water containing carbonate of lime and magnesia is boiled or heated, the free carbonic acid is evolved, and the earthy carbonates are precipitated. Sulphate of lime is only sparingly soluble in water (about 1 in 500 parts). It, as well as the carbonates, is objectionable in water for steam-boiler purposes, owing to the evaporation while boiling producing super-saturation. The precipitated carbonates cling to the edges and bottoms of the boilers with great firmness, and the sulphate of lime, produced by super-saturation, adheres with no less tenacity. I have found the incrustation in an ordinary teakettle—which, of course, is a miniature boiler—to consist of—

Carbonate of lime	80·5
Sulphate of lime	6·8
Carbonate of magnesia	4·6
Earth, oxide of iron, and other salts	8·1

100·0

Of course the incrustations differ in accordance with the composition of the water used, but from the above it may be seen that the carbonate of lime goes the farthest in the production of scale.

If the boilers are not often cleansed, the incrustation becomes thicker and thicker, harder and harder, till it is as hard as porcelain, but much tougher. The incrustations are comparatively non-conductors of heat, and to this is the evil effect in boilers due, for the thicker the incrustation is between the boiler and the water, the greater the heat will be required to raise the water to a certain temperature. In comparison with iron, the conducting power of the crust is as 1 to 37.5.

Supposing we have in a boiler a crust $\frac{1}{4}$ of an inch in thickness between it and the water, 60 per cent. more fuel will be required to heat the water to a certain temperature—hence, to raise water to a given heat, the fuel required will be according to the thickness of the incrustation. If a crust $\frac{1}{4}$ an inch in thickness intervenes between the boiler and the water, the outside of the boiler would have to be heated to near redness, before sufficient heat would be afforded to raise steam to 90 lbs. pressure. The higher iron is heated, the more rapidly does it rust or oxidise; here then is a matter of some importance. Like every important subject, it has claimed a good deal of attention, and many means have been suggested, in the first place to prevent the formation of the incrustations, and secondly for the cleaning of the boilers therefrom. Picking and scraping is often tried, but without success; in fact, all mechanical means are ineffective. To chemistry, then, we must look. I shall merely mention those processes which have been suggested, and make a few remarks thereon as to their practicability, for some methods may work well, but be too expensive to become practicable. The bark of trees, Oaks for example, has been suggested for cleaning the boilers, and in some degree for the prevention of the crust, simply because of the tannic acid it contains. Other materials containing acetic acid have been used on the same principle. Tannic acid decomposes the carbonates, forming tannates, which are insoluble, but their specific gravity being low, they float in the currents of ebullition, where they are not objectionable, as they have no tendency to adhere to the boilers. The sulphate, however, is not acted upon by tannic acid, and is therefore not prevented from forming a cake. This process may then be looked upon as partially effective. Soda ash, caustic soda, and the other fixed alkalies are much used. Their use is discarded by some, who say it is a method which simply modifies the form of the precipitate and the quality of the scale, without affording any means for its prevention. I, however, am an advocate for it as a cheap and effective process. The soda ash, or other fixed alkali, acts by decomposing the sulphates in the scale, the result being the formation of carbonates. The carbonate of lime is precipitated in large crystals, and therefore does not bear the same property of fixing to the interior of the boilers as it would otherwise have by the escape of its solvent (free carbonic acid) from water containing it. The alkali has a beneficial rather than injurious effect on the boilers, inasmuch as it prevents the free carbonic acid from combining with the oxide of iron, forming a soluble carbonate. Starchy matter prevents scale by enveloping the precipitates in gelatinous matter, which, being specifically lighter than water, floats on the top. This method is objectionable, on account of the gelatinous matter frothing, rendering it impossible to see the quantity of water in the boiler. Chloride of ammonium is sometimes used. Its action is chiefly on the carbonates of lime and magnesia. Carbonate of ammonia is produced, which, being volatile, passes off with the steam. Apart from the odour, the process is not objectionable. Salts of barium have been suggested, but they are not worth notice, since the expense is so great and the poisonous character dangerous.—*Iron.*

THE LATE FUNGUS SHOW AT SOUTH KENSINGTON.

A VERY few hours in the woods are sufficient at the present season to make a collection of most of the common Fungi. It is very pleasant work hunting for them on a bright October day, when the leaves and the bracken are turning such wonderful colours. I arranged in Moss, on a large tray, several groups of Fungi, which looked very pretty standing upright in the Moss. The prominent feature was the magnificent Fly Agaric, and next a small Agaric of a bright metallic green. The Fly Agaric, which is not very common, grows here by the road-side at the foot of a Birch tree. On October 1st we went up to South Kensington to see the Fungus show. I thought that it did not come up to one which I saw there in former years as regards arrangement; but there were many interesting subjects. The beautiful coral-like Fungi called Clavaria were variously represented, growing in little pieces of turf. The edible Fungi were very numerous, and we found that the lookers-on who had tried them were very willing to impart their experiences to those who desired information. The large Fungus, *Polyporus annotus*, found beneath the Bank of England floor, was a large grey woody mass; *Polyporus sulfureus*, of a deep orange colour, was a fine specimen. The great white

Russula of our woods was to be seen of enormous size, also the delicate pink *Russula rosacea* and the purple *Russula rubra*. There was a very large edible Puff-ball, like a nice inviting white pudding. In contrast to its innocent look were some dreadful-looking Fungi, such as *Lactarius tarpis*. There is, altogether, something so weird, at times repulsive, in the general appearance of Fungi, it is difficult to bring one's self to recognise the necessity of using any except the old-fashioned Mushroom. The "Maned Mushroom" was much advocated by some of the learned in Fungi at the show; it has rather a sooty look, but the young ones seem much in request. The show was well attended, and a fair amount of interest seemed to be taken in the specimens. The vegetable beef-steak was, as usual, admired and wondered at. M. A. D.

ROYAL HORTICULTURAL SOCIETY.

FIRST-CLASS Certificates were awarded by the Fruit and Vegetable Committee to the following vegetables proved in the society's garden at Chiswick this year, viz. :—

Pea, Laxton's Gem (Laxton), dwarf, early wrinkled green Marrow.
Pea, Dagmar (Laxton), early dwarf, wrinkled white Marrow.
Pea, The Shah (Laxton), early wrinkled white Marrow.
Pea, Marvel (Laxton), large podded, second early white wrinkled Marrow.
Pea, The Baron (Laxton), very large podded early green Marrow.
Bean, Kidney, Carter's White Advancer (Carter), dwarf, prolific early white.
Bean, Kidney, Cutbush's Giant Dwarf, very large pods, strong growing, second early.
Bean, Kidney, Osborn's New Early Forcing, fine dwarf, early prolific.
Bean, Kidney, Dwarf Butter Bean (Carter), large fleshy pods of a pale yellow.
Bean, Kidney, Mont d'Or Butter Bean (Carter), tall runner, large fleshy pale yellow pods.
Tomato, Hathaway's Excelsior (Veitch & Sons), large smooth round early; prolific.
Potato, Alice Fenn (Fenn), early white Kidney.
Potato, Early White Kidney (Fenn), large early white Kidney.
Potato, Little Gem (Fenn), early white Kidney.
Potato, Bresee's Climax (Bresee), large round second early white.
Potato, Fenn's Early Market (Fenn), large white early round; prolific.
Potato, Extra Early Vermont (Bliss & Sons), early rose-coloured Kidney; great cropper.
Potato, Vermont Beauty (Bliss & Sons), large, smooth, flat, red, second early; very beautiful.
Potato, American Pale Rose, large flat rose-coloured Kidney; second early; enormous cropper.

The late Potatoes have not yet been judged by the committee.

OBITUARY.

WE have to record, with much regret, the death of Mr. Robert Mackenzie Stark, which took place in London on the 29th ult., in the 58th year of his age. Few men paid more attention to hardy plants, especially Alpines, than Mr. Stark, whose collection of them was extensive and rich in varieties. His little book on Mosses, published some years ago, also showed him to be a good Muscologist. He was the son of a Scotch clergyman and was well educated, a good botanist, and a kind benevolent man.

COVENT GARDEN MARKET.

OCTOBER 10TH.

Flowers.—*Vallota purpurea* is at present the most brilliant flower in the market: associated with it are Fuchsias, dwarf Chrysanthemums, *Begonia Weltonensis*, *Pelargoniums*, Heaths, *Cyclamens*, some Chinese *Primulas*, &c. Of cut flowers there is a goodly supply of *Gladioli*, white *Dahlias* and *Asters*, *Violets*, single and double *Pelargoniums*, *Rose-buds*, *Epiphyllums*, white *Camellias*, *Tuberoses*, *Gardenias*, *Bouvardias*, blue *Centaureas*, *Orchids*, and many others. There is also the usual quantity of Ferns, Mosses, Palms, and other evergreens.

Fruit and Vegetables.—There is a great supply of fruits, mostly home grown, at present in the market. Pears and Apples are excellent; English Grapes and Pines are good and plentiful, and there are large importations of white Grapes from Spain and Portugal. Of English Melons there are a few and they will continue coming in till the end of the month. Water Melons are plentiful, as are also Bananas; and of Capsicums there is a very large supply. Some Messina and other Lemons of this season's growth have arrived.

Prices of Fruits.—Apples, per half-sieve, 9d. to 1s.; Chilies, per 100, 2s.; Cobbs, per lb., 1s. to 1s. 6d.; Figs, per doz., 6d. to 1s.; Filberts, per lb., 1s. to 1s. 6d.; Grapes, hothouse, black, per lb., 1s. to 6s.; Muscats, 2s. to 6s.; Lemons, per 100, 10s. to 11s.; Melons, each, 2s. to 4s.; Oranges, per 100, 12s. to 24s.; Peaches, per doz., 4s. to 12s.; Peas, per doz., 1s. to 4s.; Pine Apples, per lb., 3s. to 6s.; Tomatoes, per doz., 1s. to 2s.; Walnuts, per bushel, 8s. to 12s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 1s. 6d. to 3s.; Beans, Kidney, per half sieve, 1s. 6d. to 2s.; Beet, Red, per doz., 1s. to 2s.; Brussel Sprouts, per half-sieve, 2s. 6d.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 3s.; Cucumbers, each, 3d. to 6d.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 3d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 2s. 6d. to 4s.; button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Potatoes, per bushel, 2s. 6d. to 4s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Salsify, per bundle, 1s. to 1s. 6d.; Scorzonera, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, per bunch, 3d. to 6d.; Vegetable Marrows, per doz., 1s. to 2s.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

GOLDEN CHAMPION GRAPE.

I ALWAYS read with pleasure any remarks from the pen of your correspondent, Mr. D. T. Fish, whose habits of observation, extensive practical knowledge, and descriptive powers, render his writings particularly valuable both to the amateur and the professional gardener, but I cannot endorse the opinion so strongly expressed by him in a recent number of *THE GARDEN*, on the subject of the Golden Champion. "It is (as he says) a new sparkling Grape of noble appearance, and a decided acquisition at dessert." That it "has proved an Apple (or rather a Grape) of discord in many establishments, and has tried the skill of many gardeners," is incontestible, but Mr. Fish allows, on the other hand, that he himself has grown three fine bunches, and that excellent examples have been exhibited at Manchester and other places: why, then, condemn this noble Grape on account of the failures which have attended its production in some cases? Does not the success which Mr. Fish himself, and others, have had in growing it rather incline us to believe that, with increased care in cultivation, and a more thorough knowledge of its requirements, failure might be quite exceptional. A new Grape is so valuable an addition to the Vine growers' stock, that it is a great pity to discard a variety until it has had every opportunity of being fully tried. The only complaint really brought against the Golden Champion is, that it is subject to black spots. Now, as this occurs only in some instances, is it not the business of the cultivator to discover the cause of this defect rather than to condemn the Grape altogether? I have observed that this liability to spot attacks it at the time of its stoning, just as other Grapes are liable to "scald" at that period. We know the cause of the latter disease, and how it may be prevented, and I do not doubt in like manner, by a little increased observation some reason for the Golden Champion's spots and some cure for the malady may suggest itself to our minds. Each variety of the Vine requires a different mode of cultivation, and it is impossible to grow a number of different sorts in the same house, treating them all in the same manner. Every kind has its peculiarity, and must have distinct management. One would have thought, by this time, that this fact was universally admitted. When *Gil Blas* went to learn medicine from the renowned Dr. Sangrado, we find that that great practitioner had only two remedies for all maladies—bleeding, and copious draughts of warm water; no other treatment was followed in any case. The patient suffering from pleurisy, the gouty pastrycook, the dropsical grocer, were bled and drenched alike. This happened a long time ago; but the practice of the sage of Valladolid is but too common among us now. Black Hamburgh, Gros Guillaume, Lady Downes, Bowood Muscat, Golden Champion, Sweetwaters, Mrs. Pince, and others, are sometimes (as Mr. Thomson directs in his "Fruit culture") planted in the same house, and the gardener gives them "Black Hamburgh treatment." How often, on entering a Vinery, do we see Muscadines and Muscats side by side, though we know they require to be cultivated in an opposite manner! The Golden Champion is essentially an early Grape, and we must expect failure if we grow it as a late one—with Mrs. Pince or Alicante, for example. What is required is a more thorough knowledge of the nature of the Vine; the several varieties should be classified in the same manner as Pears. We have early, mid-season, and late Grapes. Each kind should be placed in its own particular class, and the time when it ought to arrive at perfection defined. Sweetwaters, Golden Champion, and the Duke of Buccleuch do not improve after they are thoroughly ripe. Next in order come the Hamburghs and the Muscats, which improve for a limited time after being ripe. Lastly we have the late Grapes—Mrs. Pince, Alicante, and West's St. Peter's, which retain their flavour as long as they can be kept in condition. The classi-

fication of these Grapes should be the duty of the Fruit Committee of the Royal Horticultural Society, and any new Grape (before it receives their certificate) should be examined on all its details—growth, fruit, ripening season, treatment, and other peculiarities. If this were done, we should not hear so much of the failures experienced by Mr. Fish. I remember when I visited Mr. Pearson's Vineyard and tasted the seedling Grapes so successfully raised by him, he gave me one which two months previously had received the Royal Horticultural Society's certificate, remarking that I should perceive a distinct Muscat flavour. I did not discover the slightest Muscat taste, the fact was the fruit had hung too long, and by so doing had lost the peculiar characteristic which had gained for it the certificate. One parting lance I break in defence of the traduced "Champion." Is not the plant a vigorous grower, a free fruiter, and a good setter? Are not the bunches and berries of noble size, and is not the fruit brisk and refreshing? A friend who lives not far from me showed me this Vine the other day in his house. I can truly say there was not a spot to be seen on the fruit, each bunch and berry were as large and perfect and as well finished as those of a Canon Hall Muscat. I have grown the Golden Champion satisfactorily in one of my houses, and failed in another, and I shall not be contented until I know the cause of the failure.

W. N.

FOLIAGE EFFECTS IN AUTUMN.

At the present time some valuable suggestions as to planting for foliage effect may be obtained in passing through any well-wooded part of the country. Tall Elms are changing from green to yellow, whilst giant Oaks are softening into tints of crimson and brown, Chestnuts, so beautiful in spring when studded with flowers and young foliage, are now getting rusty, and Limes will soon be denuded of foliage by chilly frosts. Forest scenery is never seen to better advantage than in the autumn, when the fresh greens blend softly into browns, crimsons, and yellows, and when the whole face of nature seems ripening into a ruddier glow under an autumnal sky. The bright sunny weather we have, until lately, experienced will do wonders in colouring the foliage of our trees and shrubs, besides ripening up the wood and blossom buds for next year's fruit crops. Our foliage effects are not limited to ornamental trees alone, for just now many of our Pear trees are richly coloured with crimson and gold. The Virginian Creeper—one of the finest of all our hardy climbers is hanging in wreaths of bright crimson, in some cases backed by masses of fresh green Ivy. Very pleasing effects may be obtained at this time of the year by associating gold and silver-coloured varieties of Ivy along with Virginian Creepers, either over ruins, rockwork, or in front of dwellings. There are now some fine examples of the beautiful effects, to which we have just alluded, in the Royal Horticultural Society's Garden, at South Kensington. In one or two places luxuriant masses of Virginian Creepers, of the most vivid crimson, repose on, or droop from, cool green masses of Irish Ivy, and the effect of this combination is most striking. In the fine old grounds at Hatfield and other places the Purple Beech is just now very effective, backed by the sere and yellow foliage of the Vines. What effects may we not produce when we get our Negundos up to 20 or 30 feet high, and contrast their snowy foliage with the crimsons and purples of the waning year? At Sawbridgeworth, some few weeks ago, we noticed a Purple Beech and a silvery American Willow side by side, a combination, the effect of which was very imposing. Even now, after one or two frosty mornings, and when Limes, Elms, and Chestnuts are fast shedding their foliage, we have two or three of our best ornamental trees still fresh and green. This is the case with the Planes, the best of all deciduous trees for planting in towns. Poplars are still green and are valuable for relieving the stiffness and formality of round-headed trees. Some of them, too, are in leaf very early in spring. Among our hardy climbers, the Wisteria is so strikingly effective as a foliage plant, in addition to its spring-flowering properties, that we allude to it here. It grows well in town gardens, and is invaluable for wreathing porticos, balconies, or even forest trees with its elegant and fresh green leafage. Trained among common Ivy, it is a striking object, especially at this season, when the leaves are acquiring a rich golden hue. The chapel at Hatfield House is now draped with heavy wreaths of Wisteria, its foliage standing out clear and bright from the sombre bush Ivy which forms a back-ground to it. Now is the time to see and admire broadland scenery like that on the banks of the Thames at Clevedon, the well-wooded slopes of Belvoir, or the famous old Oaks that still linger in "merrie" Sherwood.

NOTES OF THE WEEK.

— A NEW *Sarracenia*, exactly intermediate both in form and colour between *S. flava* and the "Huntsman's Cup" (*S. purpurea*), may now be seen in Mr. Williams's Nursery, at Holloway.

— AN American paper speaks of "a hollow Sycamore near Rising Sun, Indiana, more than 26 feet in diameter at the base, and correspondingly tall."

— THE most conspicuous plant at present in bloom in Battersea Park is *Cassia floribunda*, which is flowering as freely now as Broom or Furze does in spring.

— *LISIANTHUS Russellianus* is now in flower in Mr. Williams's Nursery, Holloway. This plant was well grown twenty or thirty years ago, but is now rarely seen in cultivation.

— THE gayest things in Parisian flower-gardens during the autumn, and even during the present month, are *Begonias* bedded-out. Some of the species and varieties are very striking when examined closely, and all are gayer than most bedding-plants seen from a distance.

— THE following hybrid Orchids, for the most part originated by Mr. Dominy, may now be seen in flower in the Royal Exotic Nursery, Chelsea, viz.:—*Cypripedium vexillarium*, *C. Harrisianum*, *C. Sedeni*, *C. Ashburtoniae*, *Cattleya exoniensis*, *C. Brabantiae*, and *C. Fausta*.

— *COLLETTIA HORRIDA*, one of the most formidable of all hardy shrubs, having spinose branchlets set at all angles on its stems, is now bearing ripe fruit in Messrs. Osborn's Nursery, at Fulham, a circumstance of but rare occurrence. Its leaves are very small, inconspicuous, and fugitive.

— At a meeting held at Aberdeen, a proposal to invite the Royal Horticultural Society to hold its next provincial show there was taken into consideration, the conclusion of which was that a Committee was appointed to make inquiries on the subject, and to report the result to another meeting.

— THE last number of the "Journal of the Linnæan Society" contains a re-examination of the Snowberries (*Symphoricarpos*) by Dr. Asa Gray, who enumerates, in addition to the common Snowberry bush of our gardens, seven species as properly belonging to that genus, all widely distributed over North America.

— A SUCCESSFUL ladies' horticultural society exists in Pennsylvania, entitled the Ladies' Floricultural and Horticultural Society of Montgomery County. During the month of June it held its show at Ambler Park, made an attractive display of flowers and plants, and awarded premiums to the amount of £80. The rivalry was spirited, and the plants and fruits of good quality.

— We have recently visited Mr. Hope's sewage farm at Romford, and without entering into descriptive details, must say that the state of such garden vegetables as we saw there grown on the sewage of the town was not such as to warrant any of Mr. Smee's recent ideas on the subject. We would, however, suggest, that in all cases of using sewage over a large surface it should be first rendered odourless, and that this process should always be performed by the town before the liquid is distributed to the cultivator.

— At Versailles they are now engaged in clipping those hideous lines of Limes, Elms, and other trees, of which there are so many tortured examples in that town. A huge ladder, reminding one of the shrouds of a ship, is moved along on wheels, and from the top of this a man, armed with a very long-handled bill-hook, slashes away at the trees, while another attends to the lower part of the machine. One cannot help regretting that so much human labour should be thrown away in distorting trees which, when allowed to grow naturally, are very beautiful.

— Not long since (says the *New York Tribune*), we were shown a collection of Japan Flags (*Iris Kämpferi*), which impressed us as being unusually fine. They have proved entirely hardy in the latitude of New York, and the flowers are large and of a great variety of colours, from pure white to deep blue, beautifully veined and mottled, many of them tipped with yellow. Their easy cultivation and propagation must certainly make them popular with the horticultural public, as they belong to a class of plants that know how to take care of themselves. They bloom after the old German Flags, and thus aid in prolonging the season.

— THE destruction of forests by fire continues (says a correspondent of the *Levant Herald*) to be reported from all parts of Asia Minor. It is an ancient but fatal practice with the native peasantry to burn down the woods for the purpose of turning the land into pasture for their cattle. In this way a large forest of Pines on the mountain of Nymph-Dagh was consumed the other day, while in the neighbourhood of Bel Kaïré, near Smyrna, a plantation of 3,000 Olive trees has been destroyed, owing to the carelessness of the country people. In Candia, also, lately a large fire has been raging for eleven days among the mountains of the Sphakia, and nearly decimated one

of the most magnificent forests in the island. It is melancholy to observe that, as civilisation advances, coal-mines are becoming exhausted and forests are disappearing.

— MESSRS. BLACKWOOD will shortly publish an "Advanced Text-Book of Botany," for the use of students, by Dr. Robert Brown, F.R.G.S., with numerous illustrations.

— *CÆLIOPSIS HYACINTHINA*, a most deliciously-fragrant Orchid, bearing clusters of pearly-white wax-like blossoms, is now in flower at the Royal Exotic Nurseries, Chelsea.

— *MASDEVALLIA COCCINEA*, a very beautiful Orchid, is now flowering in Mr. Peacock's collection at Sadbury House, Ham-smith. It has bright orange flowers with purplish veins, and is rather rare in collections.

— MR. BLACKLEY's Potatoes planted this year in the Royal Horticultural Society's Garden at Chiswick, on a plan by which he guaranteed they would escape disease, were examined the other day by the Fruit Committee, and were found to be quite as badly diseased as others treated in the ordinary way.

— *COLCHICUM SPECIOSUM*, the finest of all the Colchicums, is just now bearing its large wax-like flowers plentifully, in Messrs. Barr and Sugden's trial grounds, at Tooting. Its blossoms are of great substance, and of a delicate pure rosy-lilac colour, quite distinct from those of any other species.

— At the last meeting of the Court of Common Council of the City of London, the Markets' Committee brought up a report recommending that the committee should be authorised to advertise for plans and estimates for the construction of a new fruit and vegetable market, pursuant to the order of the court of the 18th of September last.

— IN Paris, during the past few weeks, a curious aspect of vegetation has been noticed, viz., numbers of Horse Chestnuts in fresh green leaf and in blossom. These had been leafless a few weeks previously, and contrasted singularly with other trees beside them, some of which were leafless, and some bearing persistent dead rusty leaves.

— THE beauty of the bedding plants in Hyde Park is now nearly over for this season, with the exception of two or three beds of *Fuchsias*, which are as fresh as ever, and blooming very freely. The better kinds of *Fuchsias* are among the most beautiful of all hardy and half-hardy shrubs, and deserve more extended cultivation in gardens than they at present receive.

— A SWEDISH Paper Company is about to purchase some freehold estates and forests in the province of Smaland, in Sweden, for the purpose of manufacturing wood pulp and paper suitable for printing and other purposes, for which it is stated the wood pulp of the Pine of Sweden has proved to be a specially cheap and well adapted raw material.

— LOWESTOFT has determined to have a public park, which, though small, occupies a charming bit of table-land overlooking the sea. As yet little has been done in the way of laying it out, beyond the formation of a small fountain and basin, and running walks in different directions through the Furze, with which the ground is everywhere covered.

— MESSRS. CHURCHILL (says *Nature*) have in the press and will publish during the ensuing season, a new illustrated work on "Medicinal Plants," by Robert Bentley, F.L.S., and Henry Trimen, M.B., F.L.S. This work will include full botanical descriptions and an account of the properties and uses of the principal plants employed in medicine, especial attention being paid to those which are official in the British and United States Pharmacopœias. The plants which supply food and substances required by the sick and convalescent will also be included. Each species will be illustrated by a coloured plate drawn from nature. This work will be published in monthly parts, of which we may expect the first very shortly.

— THE editor of the *Pacific Rural Press*, being uncommonly fond of Water Melons, lately offered that journal free for six months to any person who would send him the finest specimen of the fruit in which his heart delights. From the following announcement it seems that Melons have flowed freely into the office of the *Pacific Rural Press*, but that even yet the editor is not quite satisfied, and invites further competition. "We have," he says, "received quite a number, all of them excellent in quality, and of a very respectable size. One received this week, however, carries off the palm so far. It came from Santa Barbara, and measured 47 inches around one way and 43 another, weighing 46½ lb. The Melon was very sweet and juicy, and although of a large size, was close-grained, and not at all stringy. The rind was very thin, and the heart of a very fine red colour all the way through. It took all hands to get outside of it, and we even had to call on the 'devil' to assist, which he did with a willingness surprising to those not familiar with his characteristics. Who can beat 46½?"

THE ARBORETUM.

HARDY TREES AND SHRUBS.

By GEORGE GORDON, A.L.S.

THE PIN OR SWAMP OAK (*QUERCUS PALUSTRIS*).

This forms a dense-headed tree, 80 feet in height, with a stem 3 or 4 feet in diameter, and, when young, assumes a pyramidal shape, but, when old, has far extending and drooping branches. It is very hardy, of rapid growth, and, when old, its secondary branches are numerous, smooth, slender, and so intermingled as to give them, when leafless, the appearance of being so many pins, a circumstance owing to which it is called the Pin Oak in the United States. The bark on the stems of old trees of this species is scarcely corked, and on young trees it is perfectly smooth. It is found in marshy places, over a large extent of North America, particularly in the States of Massachusetts, Ohio, Missouri, Georgia, Virginia, and Illinois, and was first introduced in 1800. The leaves are elliptic-oblong, rather thin in texture, deeply and widely sinuated, more or less wedge-shaped at the base, set on long slender foot-stalks, deep-glowing green above, pale shining green beneath, and with the exception, when fully matured, of small tufts of tomentum in the axils of the principal veins on the under side, quite smooth on both surfaces, and, just before they fall off in the autumn, turn to a bright yellowish-red; the lobes are ovate-acute, somewhat alternate, with very deep open and rounded recesses, and a few very sharp-pointed serratures near the apex of each lobe terminated by bristly points; the veins are alternate, and not very prominent on the under-side of the leaf. The Acorns are round, solitary, or in pairs, and 10 lines long, and are contained in subsessile, flat, shallow, saucer-shaped cups, covered with closely-placed scales, and from 6 to 8 lines broad, and 2 or 3 lines deep. The length of a full-sized leaf is 7 inches, including the foot-stalk, which is about 1 inch long, and the breadth across the widest part is 4 inches.



Leaf of the Pin or Swamp Oak.

WEeping TREES IN THE FULHAM NURSERIES.

Few places afford more scope for observation, as regards useful trees and shrubs, than these nurseries, from the weeping trees in which the following notes have been prepared:—

Amgdalus communis dulcis pendula.—This is a weeping form of the common Sweet Almond, and is budded about 5 feet high on the Bitter Almond and Muscle and Mignonne stock. It is of a decided pendulous character, and an exceedingly free-flowering tree.

Betula alba pendula.—This weeping Birch is one of the most graceful of trees. Its dimensions are those of a medium-sized tree, and it has long, slender, perpendicularly drooping branches. It is raised from seed.

Betula laciniata pendula.—This is commonly known as the Fern-leaved Birch; it has deeply cut leaves, and is one of the finest objects that can be introduced into English gardens. The young branches droop in cord-like festoons laden with pretty leaves, which in summer are remarkably attractive. The Fern-leaved Birches, indeed, are regarded by many as the finest foliage-trees in Battersea Park in June and July. Propagated by inarching or budding.

Cerasus Chamæcerasus.—This is the weeping Cherry; it flowers freely, and also produces fruit, which, however, is of no value. If grafted near the ground, it forms a thick and semi-trailing bush; but, if grafted standard high, it makes a fine close umbrella-headed tree, the branches being slender, very drooping, short, and thickly clothed with small leaves. It makes a fine pictorial object in shrubbery borders, and in other positions in which its head is seen above the surrounding shrubs. There is also a golden-variegated variety of this Cherry, which makes a beautiful and distinct object when treated like the green sort.

Cratægus Oxyacantha pendula.—This is a weeping variety of the common Hawthorn budded on *C. Leeana* about 6 feet high. It grows vigorously, and produces a profusion of flowers precisely similar to those of common May. On lawns or in the front of shrubberies such trees as this are very effective.

Calophaca Wolgarica.—This is a pretty little shrub with pea-shaped yellow flowers, which are very attractive, as are also the red coloured seed-pods. In its ordinary state it cannot be regarded as a weeper, but when grafted about four or five feet high on *Caragana arborescens* it forms a pleasing object. Its branches do not quite reach the ground, therefore "worked" plants are well adapted for fronts of shrubberies, or for the decoration of rockwork.

Fagus sylvatica pendula.—This is one of the most beautiful of weeping trees when grafted close to the ground. Thus treated the leader assumes an erect bearing like that of a Deodar, and grows rapidly, whilst the branches are thickly produced from the base upwards, and hang down in

a most graceful and natural manner. Even when only three years old from the graft, trees of this variety have a fine appearance, and those grafted low are much better than others worked standard high.

Fraxinus excelsior pendula.—This is a weeping variety of the common Ash. It is grafted on the erect variety, either immediately above the ground or 6 or 8 feet high, more or less, as may be required. The branches hang down thickly and with a little attention will form almost an impenetrable veil, enclosing often a pleasant summer retreat. The ends of the branches, on reaching the ground, spread out or turn up, and may be shortened or encouraged as desired.

Fraxinus excelsior aurea pendula.—This is a variety of the preceding, but scarcely quite so strong-growing, and it is

characterised by the yellowish bark of the young branches which gives the tree a peculiar appearance.

Fraxinus lentiscifolia pendula.—This pendulous variety of the Lentiscus-leaved Ash forms a fine ornament in a sheltered situation. It requires to be grafted some 6 feet in height, in order to show off its true character to advantage, as its branches are very slender and Willow-like compared with those of *F. excelsior*. They are, however, produced in great abundance, this variety of Ash making an excellent pendulous umbrella-headed tree.

Ilex Aquifolium pendula, and its variegated-leaved variety.—Most of us are acquainted with the Weeping Holly, although it is only a modern discovery. It has a truly pendulous character, is a robust grower, and makes a fine tree for an arbour when grafted about 6 feet high. There is also a beautiful variegated-leaved form of it, and both grow freely when grafted on seedlings of the common Holly.

Planera Richardi pendula—This is the weeping variety of the Zelkova tree; it produces long pendent slender branches, which are pretty well clothed with leaves. It is grafted, several feet above the ground, on the erect-growing variety. It forms a handsome ornament either for lawns, pleasure-grounds, or parks.

Populus canescens pendula.—This variety of the White Poplar forms a beautiful and graceful object, which, at a distance, resembles a Weeping Birch. It is grafted pretty high on the Lombardy Poplar, and prefers a rich and moderately moist soil to one dry and poor.

Populus tremula pendula.—This is a weeping variety of the Aspen, and a fine specimen of it may be seen in the Brompton Cemetery. It is a desirable and graceful tree for planting near water, but its roots must only be in a moderately moist medium, as continuous saturation would soon kill them.

Quercus Robur pendula.—This is a truly pendulous variety of our common British Oak; it grows rapidly and forms a conspicuous object in the landscape; grafted on the common Oak (*Q. pedunculata*), on which it does well. It is by no means a common tree.

Salix americana pendula.—This is a strong-growing Willow, and one often met with in gardens on account of its adaptability for many ornamental purposes, and its easy growth. It thrives best budded or grafted, and makes a fine object when worked low, as it annually sends up good growths, and in a few years forms a beautiful and graceful tree.

Salix babylonica.—It need hardly be stated that this is the common Weeping Willow, with which everyone is familiar, and which is so well adapted for choice positions in gardens, cemeteries, or water margins. It is invariably grown from cuttings. There is an idea amongst horticulturists that the male variety of *S. babylonica* is not in England, but in the Fulham Nurseries both male and female plants are growing side by side.

Salix babylonica annularis or crispa.—This is generally known as the Ringlet-leaved Willow, and is one of the most picturesque objects to be found in our gardens. It thrives best near water, where it attains the dimensions of a small tree with drooping branches, not, however, like those of ordinary Weeping Willows, but more after the style of those of a little Lime tree. There are some fine specimens of the Ringlet-leaved Willow in the arboretum at Syon House.

Salix caprea pendula.—This is commonly known as the Kilmarnock Weeping Willow, and is also called the Weeping Goat Willow, and the Great Round-leaved Willow. It thrives well in moderately dry garden soil, and has broad downy leaves and long branches. When grafted about 6 feet high, it makes a beautiful weeping tree and as the branches are thickly produced, and the leaves large, they make a suitable canopy for an arbour. The shoots reach quite to the ground and sometimes spread out and run along it. The Kilmarnock Willow is generally laden with catkins in spring.

Salix fuscata.—This is an American Willow which has more of a creeping than erect-growing character; it has been lately tried, worked as a Weeper, being grafted from 4 to 6 feet high. The effect has been excellent; thus circumstanced it thrives admirably, grows strongly, weeps gracefully, and in spring is one of the most showy and free-flowering of Willows.

Sophora japonica pendula.—This is one of the prettiest deciduous weeping trees which we possess; it is quite hardy and grows freely in any ordinary garden soil. It is usually budded on seedlings of the common Sophora about 6 or 8 feet high, an elevation from which the branches hang down like those of an Ash, and on reaching the ground their points spread out or turn up. If grafted or budded close to the ground they send forth shoots like trailers, but, unless for banks and rockeries, this habit of growth is undesirable. There is a fine pair of old specimens of this tree in the Fulham Nurseries.

Taxus baccata Dovastoni.—This is a peculiar broad or flat-headed variety of the English Yew, usually called the Dovaston Yew.

It can hardly be called a weeping tree, as its branches spread out horizontally rather than droop. It is very ornamental and well adapted for planting on banks.

Tilia alba pendula.—This, which is the white-leaved European Weeping Lime or Linden, forms a beautiful object in the landscape, being an extremely strong grower, and producing an abundance of large and handsome leaves. It requires to be grafted pretty high, so as to give its branches space in which to develop themselves.

Ulmus montana pendula.—This is a pendulous form of the Scotch or Wych Elm, and it makes a beautiful spreading tree with fan-shaped and somewhat horizontally-drooping branches. In the ordinary form, *i.e.*, when grafted at or below the ground level, this variety of Elm makes a fine object, being well furnished with branches from the base. When grafted standard high, too, it certainly looks handsome, and is well adapted for an arbour or gateway, but it cannot bear comparison, as regards beauty, with isolated specimens of the same tree grown in a more natural way.

Camperdown Weeping Elm.—This is a variety of *Ulmus montana*, and thrives well on that stock. It has broader leaves than the common weeping kind, and is of a robust growth, whilst the young branches present at every joint a peculiar zig-zag form.

Ulmus montana glabra pendula.—This is known as the Smooth-leaved Wych Elm; it forms a handsome object, and is quite distinct from all other Elms. The branches are long and droop almost perpendicularly.

Ulmus montana microphylla pendula.—This is a small-leaved sort, the growth of which is rather short and weak; nevertheless it forms a good pendent umbrella-shaped tree. The stronger-growing sorts, however, are the most ornamental and useful.

Ulmus montana rugosa pendula.—This makes a pretty ornamental tree used like the others. It is a moderate grower with somewhat wrinkled leaves, and light-grey coloured wood. W. F.

INDIA-RUBBER TREES IN UPPER BURMAH.

THE estimated number of trees (says Captain Stover, in the *Chemical News*), which are chiefly situated in the Bhamo and Mogoung districts, is 400,000. They thrive best in damp moist soil, and in thick forests, shady and cool. The trees attain to a height of from 50 to 100 cubits, being from 15 to 25 cubits in girth at the base (full-grown trees), and with roots creeping over the ground for some distance. They are fit for tapping when from six to ten years of age, at which time they are from 15 to 20 cubits in height and 3 cubits in girth. When the time for tapping arrives, incisions are made in the trunks of the trees and in the roots above ground. Hollow Bamboo cups, about 1½ feet in length, sloped and pointed similar to a prepared pen, are then inserted in the incisions, and receive the oozing juice or milk. Three or four hundred of these Bamboo receptacles are inserted in each tree. The tapping is continued for about a month, after which time it is discontinued, and the wounds allowed to heal. At the expiration of another month the trees have regained strength, and tapping is recommenced. In preparing the india-rubber, the following rude method is observed:—Water is boiled in large iron pans, and the juice of the tree is thrown in, when it gradually thickens, and subsequently is dried. The india-rubber so obtained is being brought into local use for covering water-buckets, baskets, and boxes as a substitute for dammer. The existence of the India-rubber tree in Upper Burmah does not appear to have been known, or, at any rate, it did not attract attention, until somewhat recently, when three Europeans, Messrs. Miller, Marshall, and Henri, who were employed at the jade stone mines, were forced to look and search about in the forests for a substance that would effectually repair a diving apparatus that they used in working for jade stone. They found india-rubber, and repaired the apparatus. The existence and value of the juice was then brought to the notice of the king, and Mr. Henri is now employed in tapping the trees and preparing the juice. Upper Burmah could produce 200 or 300 tons of this useful substance per annum.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

A Historical Mulberry Tree.—We learn from the *City Press* that in the garden of the Treasurer of Christ's Hospital there is a Mulberry tree which is said to have grown from a slip taken from one which grew over the grave of the two princes who were murdered in the Tower. It is now in full bearing, and yielding excellent fruit.

Cotoneaster microphylla.—Few wall plants are more beautiful than this Cotoneaster. I have a plant of it on the front of my house, which, in early summer, is covered with gay Hawthorn-like blossoms, and in autumn and early winter it is studded with rich rosy berries. It stands the sea-breeze well, and is as hardy as the French Tamarisk, with which it is associated.—OSCAR RICNE, *Denmark Road, Lowestoft.*

BIRDS AND INSECTS.

(Concluded from p. 304.)

FREDERICK the Great, king of Prussia, being very fond of Cherries, one day ordered a general crusade against the sparrow tribe, some of them having ventured to peck at his favourite fruit. A price of six pfennings a brace was set on them; consequently throughout Prussia the war was briskly carried on, and so successfully that at the end of two years not only were Cherries wanting but most other fruits. The trees were covered with caterpillars, and completely stripped of leaves; insects had increased to a most alarming extent, for other birds had been frightened away by the extraordinary measures taken mainly against the sparrows. The great king was obliged to confess to himself that he had not the power to alter that which had been ordained by a still greater King than he, and that all attempts at violence and wrong were sooner or later avenged. He retracted his decree, and was even obliged, at a considerable expense, to import sparrows from afar; for these being birds of obstinately non-migratory habits, would never have returned of their own accord. When field-sparrows feed in a corn-field they ought merely to be warned off, not killed, unless indeed, there be many insectivorous birds, near at hand. Sensible gardeners every year more and more discourage the slaughter of sparrows.

All the species of warblers (*Sylvia orphæa*), the Reed wren (*Arundinacea*), the yellow wren (*Sylvia trochilus*), the white wagtail (*Motacilla alba*), the stonechat (*Saxicola rubicola*), as well as the different sort of shrikes (*Lanius*), are excellent insect-hunters, and particularly the spotted fly-catcher (*Muscicapa grisola*), which bird it is better to keep at a distance from bee-hives, whose vicinity it frequents. In Vineyards the blackbird does not compensate by its services for the damage it causes to the crop; but in other places they ought to be protected, for they devour numbers of the destructive earth-caterpillar—a task also performed by the agile common starling (*Sturnus vulgaris*), which likewise delivers cattle at pasture from worms, flies, gadflies, &c.

Swallows are most active insectivora—we should therefore protest against the custom of capturing them for food, which prevails in some parts of Germany; we should intercede also for the lark, who, though of use to the agriculturist, finds here an implacable enemy in man. We will now just take notice of a few of the larger class of birds, which are of very important use to our different sorts of culture. The cuckoo is the first on the list. Nature has formed this very remarkable bird for the express destruction of hairy caterpillars, which other birds cannot eat, and has organised its stomach for the easy digestion of such food. In 1847 an immense forest in Pomerania was on the brink of utter ruin, caused by the havoc of caterpillars. It was suddenly and very unexpectedly saved by a band of cuckoos, which, though on the point of migrating, established themselves in the place for a few weeks, and so thoroughly cleansed each tree that the following year neither depredators nor depredations were to be seen. The cuckoo, like the small insect-eaters, eats all the day long, for the caterpillar is full of watery matter, and contains but little solid nutriment. By careful observation it was ascertained that the cuckoo devours one caterpillar every five minutes, or 170 in a long day. The hairy stuff sticks to the mucous membrane of the bird's stomach, so as often totally to cover it. If we assume that one-half of the destroyed insects are females, and that each contains about 500 eggs, one single cuckoo daily prevents the reproduction of 42,500 destructive caterpillars. How many men could do the like in one day?

The race of woodpeckers almost rival the cuckoo in utility, and, though unappreciated, are the good genius of our woods. They are full of vigour and courage. When we pass under a tree, how eagerly they look down upon us, seriously and attentively, with their clear brilliant eye! almost saying, "Friend, dost thou well comprehend the full utility of the work we have on hand? if not, pray be attentive and bear witness to it hereafter!" Their chief victims are very mischievous insects, such as the Noctua, *Lasiocampa*, *Sphinx pinastri*, *Tisiodes pini*, *Hylurgus piniperda*, &c. The green woodpecker (*Picus viridis*), and the grey-headed woodpecker (*Picus canus*), are especially distinguished for their skill in putting to death wasps, whose sting avails nought against them. The greater spotted woodpecker (*Picus major*), is ever on the look out for insects and larvæ; the three-toed woodpecker (*Picus tridactylis*), as well as the great black woodpecker (*Picus martius*), much prefer the *Coleoptera libiola*. Another important item in the history of those birds lies in the fact of their being the forest-bird carpenters in ordinary. Every woodpecker, in the course of the year, drills at least a dozen holes in the trunks of trees, not only constructing as commodious and pretty a nest for hatching as possible, but also resting-places in which he lodges for a few nights at the period of migration; when at his work shavings several inches in length are observed to drop to the ground; and in such like cavities hosts of small insectivorous birds find convenient

retreats for laying and hatching fully prepared ready to hand. It is acknowledged that this operation of the woodpecker causes no injury to woods, as they on no account work upon healthy trees, but prefer decayed ones which are beset by insects.

Even amongst birds of prey (Rapaces), many insectivora are to be found, and such of them are worthy of protection. All the smaller birds of prey, and some of the larger ones also, feed their young on insects, and they themselves, when hatching, hardly touch anything else. The most useful members of the order incontestably are owls, which being extraordinarily gifted for the work, devour in their twilight haunts considerable quantities of forest insects, principally night moths and their caterpillars. Some species of the owl are noted, together with the rook-crow (*Corvus frugilegus*), the jackdaw, the jay, and the great cinereous shrike, for their destruction of cockchafers. A tawny owl (*Strix stridula*) was once dissected at Berlin, and its stomach discovered to be full of insects, and amongst these were at least seventy-five caterpillars of the *Sphinx pinastri*; in the destruction, as well, of field mice and rats, they render services whose importance is but seldom recognised. The English naturalist, White, once watched for a length of time a pair of white owls (*Strix flammea*), and noticed that they brought a mouse to their nest, on an average every five minutes; a couple of the little owls carried to their young eleven mice in the course of an evening in the month of June. Nothing is more absurd than the way in which these birds are hunted down by ignorant ploughmen, whose chief delight is to have a few of them nailed up against the barn-door; they might as profitably nail up their cats (who frequently snatch up a fowl or two), for the owl nightly makes away with more mice than the very best of cats. In the stomachs of twenty dissected owls, nothing was found but mice and moles; the great-eared owl (*Strix bubo*), is, however, much less deserving of our sympathy, for besides frogs, serpents, lizards, mice, &c., this bird often falls upon barn-door fowls, and useful quadrupeds. A great number of diurnal birds of prey, such as the sparrowhawk (*Accipiter nisus*), the kite (*Falco milvus*), and the harpy (*Falco rufus*), are mischievous, for they slaughter indiscriminately the more diminutive useful birds, and even the smallest of their class devours as many birds as insects. Still the kestrel falcon (*Falco tinnunculus*), not at all a scarce bird with us, eats so many beetles, grasshoppers, and field-mice, that its utility in this respect amply repays the harm it may cause. The same description is applicable to the hobby falcon (*Falco subbuteo*). A flight of these last birds lately passed over the Canton du Vaud, and alighted on the trees standing round the village of Novvion. The inhabitants, fancying them to be pigeons, killed a few; but when they saw the eagerness with which the bird sought after and devoured cockchafers, they soon desisted from their ignorant amusement. The most useful, and at the same time most common bird of prey, is the common buzzard (*Falco buteo*), so often mistaken for the injurious goshawk (*Falco palumbarius*); it destroys immense quantities of rats, mice, snakes, &c. More than twenty mice have been found at one time inside one of them, and Steinmuller once dissected a bird of this class, and found no less than seven *Anguis fragilis*, and thirteen *Gryllotalpæ* in its stomach. The annual consumption of one single bird has been computed at about 4,000 mice. Perched upon a bush or high stone, the bird watches for hours the precise instant when the mole or rat approaches the surface of the earth; it then eagerly drops down, inserts its claws deeply in the soil, and snatches up the animal. The brown mark around the belly, and the heavier flight, are signs sufficient to distinguish it from the terrible goshawk; these marks ought to be attentively studied. The honey-buzzard (*Falco apivorus*) is also a great mouse-eater, besides which, it also swallows caterpillars, wasps, and horseflies, hooking them out of their nests, and devouring them together with their eggs. These two last-mentioned buzzards are certainly hurtful to other birds, but their utility compensates for all mischief; besides they are heavier, slower, and less alert than the goshawk, and therefore do not destroy nearly so many victims.

It is not my intention here to call attention to all the useful birds in detail, but merely to some of the most remarkable of them, with a view to showing how great is their importance to all branches of agriculture. Without these creatures, agriculture and vegetation would be impossibilities; they perform a work which millions of human hands could not do half so completely.

We have yet to treat of an order of birds, numbering several families, which appear in great numbers and play an important part in the economy of nature, we mean the crows (*Corvus*). It is difficult to judge them all in one body, for the different species vary in their mode of life. The jay, which belongs to this class, destroys quantities of insects, but damages the seeds of forest trees, and attacks nests of small birds, devouring their eggs and young; it is remarkable also for its destruction of venomous vipers. The jay is hurtful to many

crops; it has been seen to tear off a Wheat-ear whilst in full flight and swallow it whole. The same may be said of the carrion crow (*Corvus corone*), which at the laying period, behaves like a real bird of prey, and carries off quails, young ducks, partridges, and even leverets. The great raven (*Corvus corax*), still more closely imitates the birds of prey, and equally carries off young hares and rabbits, but it has one great redeeming point in its character, that of making away with dead and putrid carcases. Magpies decidedly do more harm than good; voracious and cunning, they do not rest satisfied with young birds merely, but hunt perpetually those of all ages; the magpie therefore may be shot without compunction. The most innocent and useful members of the above order are the Jackdaw (*Corvus monedula*) and the rook crow (*Corvus frugilegus*), which feed a good deal on cockchafers, snails, earthworms, mole-crickets, and mice; therefore the two last species may be encouraged, whilst the rest ought to be kept in check if inclined to multiply rather too rapidly. Those few birds which live exclusively on vegetable products appear at first sight to be hostile to mankind, and to harm the cultivator. This apprehension is more imaginary than real; man is too much inclined to forget the great indirect profit he derives from the Granivora, and only to look upon the damage they cause at certain periods. Do they not destroy quantities of the seed of all sorts of weeds? And how can the agriculturist (as happens in most countries) look upon the wood-pigeon as a plague? Let him but take time to observe how those birds consume the seeds of the Nigella, the wild Poppy, and several noxious varieties of the Euphorbia, which no domestic animal can eat, as noticed by Glauser. For the above reason pigeons are now strictly preserved in Belgium. The crossbill (*Loxia curvirostra*) and the siskin (*Fringilla spinus*) eat, it is true, many seeds of trees, but they also consume great quantities of Burdock seeds; others again of the Granivora, the twite (*Fringilla linaria*), the brambling (*Fringilla montifringilla*), &c., eat abundantly of the seeds of Plantain, wild Poppy, Burdock, Chickweed, Groundsel, Sowthistle, and other noxious weeds. The bullfinch (*Pyrrhula*), on the contrary, commits depredations amongst blossoms, whilst the haw-finch (*Loxia coccythraustes*), despoils cherry-trees to get at the kernel of the fruit; the last species, however, does not often come in our way.

This rapid survey of the economy of Nature is sufficient to convince us that we have numerous and vigorous auxiliaries always at hand to arrest the ever-threatening invasions of insects; it is our duty to aid their increase and employ their energies for the advancement of agriculture. We must begin then by abstaining from shooting useful birds, by favouring their reproduction, and by familiarising them with our persons; bird-netting is an abuse unfortunately too frequently indulged in, but it ought to be banished from the vicinity of all cultivated lands, as being extremely detrimental to agriculture. If one only reflects how much the little creatures help to enliven our fields and gardens with their gay chirruping, their fine plumage, their active and lively ways—and how many victims are sacrificed ere one is secured to bear for a few short years the imprisonment of the cage—it is utterly impossible to feel any sympathy for bird-catchers. If sport is to extend beyond the birds required for our use—if children find an amusement in entrapping the titmouse, the warbler, the nightingale, the chaffinch, the lark, the redbreast—is it not both a sin and a great folly? and will not the inevitable result be the total loss of our harvests and fruits? Why should we criminally interfere in the Divine organisations of Nature? why slaughter our firmest allies? why lift our hands against our benefactors and protectors? If woodmen and peasants could be made to understand the immense services the cuckoo, the owl, and the woodpecker render to mankind, they certainly would protect those valuable servants from the senseless destruction they are subjected to.

The Government of many German States have issued ordinances to prevent the indiscriminate slaughter of singing birds; this very good example has been set by Hesse, Baden, Wurtemberg, and Prussia. In Saxony a heavy fine is imposed on any person found capturing a nightingale, and for every bird kept in a cage a tax of five thalers (15s.) is levied. The law does not extend to Saxon duchies, nor the forests of Thuringia, where in every village no inhabitant is without his caged songster, and some have as many as thirty or forty different sorts; free nightingales are therefore getting scarce there, and insects numerous. Many men of sense, such as Lenz of Schrepfenthal, Gloger of Berlin, Schott de Schottenstein of Ulm have zealously employed their talents for the protection of small birds, and have further advocated attention to their increase. This is an important object which everyone may in some degree promote. Every owner of a wood, field, or garden, ought to spare old trees, in the cavities of which those birds who prefer hatching in obscurity (such as the titmouse, the common creeper, the wren, the owl, the common starling, the grey redstart, the woodpecker, &c.), would find a proper asylum. If the

dry leaves and detritus be taken out of such holes, and if when they run perpendicularly down the trunk, a small board with an opening of about 2 inches in diameter be nailed over, they will soon be peopled, and in a few hours the lodgers will amply repay the pains taken on their behalf. Let the little square boxes (which in some countries the law obliges people to hang out of doors for starlings) be imitated, and care taken that the young are out of all danger of being carried off. And when the thrush, the chaffinch, and others make nests on a tree, let them be protected from children and cats by surrounding the trunk with a crown of thorns. To compensate the want of hollow trees for those birds which choose holes to hatch in, it is easy to make small boxes of common wood, closed on three sides, but having on the fourth a small opening left, and place beside them a round piece of wood to serve as a perch; such a little house should be placed facing eastward, under the cornice of a roof, or in the branches of some tree at a height of from 10 to 12 feet from the ground, not too much under the shade of the leaves, and in a retired spot. These hatching-boxes can be made of different sizes; the titmouse is very fond of a box of about 8 to 10 inches in length inside, and of 3 or 4 inches in height; of course larger birds prefer roomier berths. These boxes should be painted of a dark grey colour, and well garnished with Moss. Much good has been done in this way, now that the importance of encouraging bird-hatching is more generally appreciated in zoological gardens, agricultural schools, and horticultural establishments. Under the advice of men of science and of judicious landholders, many thousands of hatching-boxes are being set up, and no outlay is more quickly remunerative. Whoever possesses a suitable piece of ground may give himself a real treat, and at the same time much gratify the winged gentry, by planting a small space thickly with Thorn bushes, Cherry trees, Oaks, Firs, &c., and covering the ground with branches of the prickly Thorn so as to prevent the intrusion of cats. Once established, the plantation will soon be the assembly-ground of multitudes of small birds; they are very fond of such thickets, because of the sense of security they impart, and the influence of their vicinity will soon be noticeable. Many of these asylums have been such protection to large properties that fruit has ripened even in unfavourable seasons. During both winter and summer the grateful birds had been hard at work, and cleansed every tree from insects. Those who cannot form such thickets can at all events place just off the roofs of their houses or barns, a rather broad lath, on which swallows will love to perch. More may be done for our own gratification as well as that of birds, by placing a board, with a covering and side pieces attached to it to keep off snow or rain, out of the window of an uninhabited room, or in some out-of-the-way corner; let it be kept plentifully supplied with crumbs of bread, little bits of Potato, barley seeds, and Elderberries, and the hostelry will be in very great request, especially during the winter season, and it will be gladdening to witness the mirth and good humour existing amongst the little visitors. Such a thing is easily arranged, and it is of real benefit to the half-starved bird, which soon gets accustomed to the hospitable house, and pays its debt of gratitude during summer-time by loud songs and a zealous hunt for insects.

To fix the useful titmouse in one particular spot, these simple means are employed. A caged titmouse is placed on the branches of a tree, and the captive will soon attract its companions. If a few green Fir branches be hung during the autumn on the bare boughs of fruit trees, they will during the winter be actively visited and regularly cleansed by the titmouse. It is well to come to the rescue of small birds, especially during the hatching season, and deliver them from their winged enemies, magpies (*Pica caudata*), ravens (*Corvus corax*), &c.; whilst for the protection of fish-ponds, we must wage war against the common heron (*Ardea cinerea*) and the water-ouzel (*Cinclus aquaticus*); but the capture and sale of the titmouse, the chaffinch, the redbreast, ought to be strictly prohibited, and the indiscriminate slaughter of insectivorous birds heartily condemned.

Reader, take the work of preservation to heart! You have looked into the admirable economy of Nature which God has so wisely ordained and organised, manifesting His power even amidst the most minute objects. Contribute to the utmost of your power to maintain that order: it is both pious and wise to do so!

Feed and protect these birds: they will enliven your courtyards and gardens; they will come to you in full confidence, and await the crumbs given by your hands; they will build nests in your bushes and amuse you by their activity and solicitude for their young; they will charm your ears with their songs of joy and gratitude; and if throughout the land they find both protection and comfort, they will largely and in a most striking manner requite the benefits received by proving themselves to be the most faithful protectors of your fields and forests, orchards and gardens, and of cultivation in general.

THE INDOOR GARDEN.

CATTLEYA TRIANIE.

THIS is one of the most beautiful of all our winter-flowering Cattleyas, and, when well grown, it makes a fine plant either for home decoration, or for exhibition purposes. Like its congeners, it varies considerably both in the size and colour of its broad-petaled flowers. One variety has sepals and petals of the most pearly whiteness, the lip being white with a faint lemon-yellow blotch in the throat. Another form has deep rosy flowers, the lip being blotched with dark velvety crimson, and between these two extremes we find a whole series of varieties distinguishable only by slight differences in the length or breadth of the floral segments, or by their slightly varying shades of soft colouring. This species grows well in an ordinary plant stove, or intermediate house, and does best in a fresh, open, well-drained compost, consisting of fibrous peat, Sphagnum, and coarse well-washed river-sand or grit. If the Moss is encouraged to grow over the surface of the compost all the better, and an abundant supply of moisture is necessary during the summer and autumn months. This variety of Cattleya generally flowers very freely in January or February, and the flowers last in perfection a fortnight or three weeks if kept free from cold, damp, and drip. If grown in quantity it will keep up a succession of delicately tinted flowers for two or three months at a time. In some collections it is known under the name of *C. Warscewiczii*, *C. Warscewiczii* delicate being the palest variety. The accompanying illustration gives an excellent idea of the general appearance of this useful species.

F. W. B.

FILMY FERNS.

(Continued from p. 272.)

Cool House Kinds.

THE following species are all worthy the attention and care of lovers of Ferns; each possesses some charm peculiarly its own, although it is not likely, except in rare cases, that all can be found in one collection. The first section of my enumeration will contain those species which thrive under greenhouse temperature:—

HYMENOPHYLLUM DILATATUM.—This species is, perhaps, at once the largest and most beautiful of the genus; the fronds are broad, three times divided, with the stems winged, of a delicate pale green colour, and from 12 to 18 inches long; they are produced from a creeping rhizome, which should not be buried, but allowed to climb. It seems to be abundant in New Zealand and Java; but, as far as I am aware, the Java form of the plant is not in cultivation.

H. PULCHERRIMUM.—This is nearly allied to the preceding, yet very different in its style of beauty. The fronds are from 8 to 15 inches long, and some 4 or 5 inches broad, deeply divided into fine segments, soft in texture, and pale green in

colour, produced from a creeping rhizome. Native of New Zealand, about the district of Lake Waikare.

H. POLYANTHOS.—A species having a wide geographical range, being common throughout the West Indies, South America, Brazil, the East Indies, New Zealand, and various other places, and varying, consequently, much in appearance. The West Indian form is most frequently found in our collections; but, judging from specimens in my herbarium, that from New Zealand is the most beautiful. The rhizome is wiry and creeping; the fronds tripinnatifid, dark green, and from 6 to 12 inches long.

H. CRUENTUM.—Fronds entire, broadly lanceolate, and produced from a creeping rhizome; when young, they are green, but change with age to dull blood-colour. An extremely rare plant, native of Chiloe and Valdivia.

H. ÆRUGINOSUM.—On account of the long tawny hairs with which the fronds are clothed, this species must not be watered over-head. Rhizome creeping; fronds oblong, tripinnatifid; segments close and dense, clothed with long tawny hairs. A handsome kind from various parts of New Zealand.

H. PECTINATUM.—A truly beautiful species, at present very rare in cultivation. Rhizome creeping; fronds upwards of six inches long, linear-lanceolate; pinnae curving upwards, and toothed on the upper side only, thus resembling a comb. It appears only to exist in Southern Chili.

H. SCABRUM.—This is a fine erect-growing plant, producing fronds from 12 to 20 inches in length, ovate-acuminate in shape, and pinnate, the divisions being several times divided. Stems clothed with rough hairs. It seems peculiar to New Zealand.

H. FLEXUOSUM.—Fronds broadly ovate, beautifully crisped, with margins undulated, much divided, deep green in colour, and nearly a foot long; it is nearly related to *H. crispatum*, and seems to have been hitherto found only in the Northern Island, New Zealand.

H. FUCIFORME.—A magnificent species, but extremely rare. It is related to *H. dilatatum*. The

fronds are from 1 to 2 feet long, and very broad, erect, smooth, and shining, broadly winged, tripinnatifid, and suffused with a beautiful glaucous hue. It delights in a very moist atmosphere. Native of Chiloe and the Island of Juan Fernandez.

H. ATTENUATUM.—Rhizome creeping; fronds about a foot long (half of which is naked), thrice divided, margins toothed and furnished with hairs, very membranous in texture, and pale green in colour. Native of Chiloe, and top of the Organ Mountains in Brazil.

H. DEMISSUM.—This fine species is a general favourite; it produces deep green ovate-acuminate fronds, which are tripinnatifid, with very finely divided segments. Native of New Zealand and various islands in the Pacific.

H. FLABELLATUM.—A species which seems to vary consider-



Cattleya Trianie.

ably, some small forms of the plant having short dense fronds, whilst more frequently they attain a length of about 10 or 12 inches; they are flaccid, ovate, twice divided, and shining green in colour, produced from a creeping rhizome. Native of Tasmania and New Zealand.

H. DICHOTOMUM.—A somewhat dwarf but beautiful and rare species; the fronds are about 6 inches long, ovate-lanceolate in shape, and twice divided; the segments are much divided, very delicate and crisped, somewhat toothed or spiny at the edges, and deep green in colour; rhizome creeping. Native of Chiloe and Juan Fernandez.

H. CHILOENSE.—This is a most elegant little tufted species; fronds lanceolate, once or twice divided, furnished with simple rigid hairs, and pale green in colour. Native of Chiloe.

H. CAUDICULATUM.—A fine bold-growing species, with a creeping rhizome, and having some affinity with *H. fuciforme*, but quite distinct from that plant. The fronds are from 10 to 14 inches long, the stem broadly winged, the leafy portion broad, three times divided, the ends of the segments being lengthened out into long tail-like points; colour, bright shining green. It seems to be tolerably abundant on the Organ Mountains, and is likewise found in Chiloe.

H. CRISPATUM.—This appears to be a somewhat variable plant, some specimens of it received from Northern India differing considerably from the form in cultivation from New Zealand; the rhizome is creeping; fronds usually from 4 to 6 inches long, and much waved or crisp in appearance, they are tripinnate, broad, and deep green in colour; it covers a piece of sandstone or a tree Fern stem with an elegant and dense drapery.

H. BIVALVE.—In cultivation this is extremely rare, and I am informed that it is by no means a plentiful species even in its wild habitats; the fronds are erect and broadly ovate, three times divided, the much divided segments being somewhat spiny; colour deep green. Native of New Zealand.

H. TUNBRIDGESE.—Although this is a native plant, it must by no means be omitted in this enumeration, neither should any Fernery or Fern case be without it. I have gathered it in various parts of Ireland in great abundance, on Arthur's Seat Edinburgh, and about Weymss Bay, in the latter locality somewhat sparingly. The fronds are produced in great abundance and soon cover the ground with a beautiful carpet; they are some 3 or 4 inches long, erect, twice divided, and olive-green in colour, if watered overhead, instead of deep green, the fronds soon turn black. Though usually called a British plant, it has a wide geographical range, being found throughout Europe, in various parts of South America, South Africa, New Zealand, and Tasmania.

H. WILSONI.—This also, though generally called a British plant, is widely distributed; it resembles the preceding, but is distinguishable for its longer and narrower fronds and the curved segments, and by the edges of the involucre being smooth. It is an elegant plant, and in some localities in Scotland I have found it very abundant.

H. VALVATUM.—This is a very elegant plant, producing from a creeping rhizome fronds which are from 6 to 12 inches in length, broadly oblong in shape, and tripinnatifid; the segments are somewhat narrow, undulated, and slightly hairy, smooth and rich green in colour. It is a native of Columbia, at elevations of 3,000, 4,000, or 6,000 feet.

TRICHOMANES RENIFORME.—This is a very distinct New Zealand species, the rhizomes of which are creeping; the fronds are nearly round, coriaceous, and of rich deep green; when fertile, the exerted involucre forms a beautiful fringe round the edge; the fronds on well-developed specimens are some 4 or 5 inches broad.

T. PYXIDIFERUM.—This enjoys a wide geographical range, being common throughout the West Indian Islands, Peru, and Brazil, and I have also received it from considerable elevations on the Cameron Mountains, West Africa; it, therefore, varies considerably. The fronds are produced from a slender wiry creeping rhizome; they vary from 3 to 6 inches in length, and are twice and three times divided. The segments are plain, smooth, and deep green in colour, and rapidly form a rich drapery for a Fern case.

T. VENOSUM.—This is another free-growing plant, which soon covers an old stump or block of sandstone with elegant

drapery; indeed, as far as I am aware, it has never been found naturally in any other situation except on the trunks of trees. The rhizome is almost thread-like; the fronds are from 2 to 4 or 5 inches in length, pinnate, very delicate, and in colour shining light green. It is very abundant in New Zealand, New Holland, and Tasmania.

T. PARVULUM.—This is a very dwarf-growing species, peculiarly suited to those having a small Fern-case, because it may be established on a small piece of Cork and suspended from the roof; it is, however, rare in cultivation; it is said to be a native of Java, Bourbon, and the Philippines, but I have received it, at different times, and from different friends, resident in Japan, and therefore we may hope to see this little gem thoroughly established as a Wardian-case Fern. I have never seen the fronds more than an inch in height; they are densely matted, and resemble a miniature fan Palm; the colour is deep shining green.

T. ELONGATUM.—This elegant species has a tufted habit, and produces fronds from its erect caudex from 6 to 10 or 12 inches in height; they are ovate in outline, twice divided, dense, and deep green in colour; its affinity seems to be with *T. rigidum*, but it is very distinct from that plant. It is a native of New Zealand.

T. HUMILE.—This is an elegant dwarf-growing little Fern, which soon forms a dense covering to whatever it becomes attached. The fronds proceed from a slender creeping rhizome, and seldom exceed 3 inches in height; they are lanceolate in shape, twice divided; segments narrow and bright green. It is a native of New Zealand and various islands in the Pacific.

T. EXSECTUM.—This has a creeping rhizome; its fronds are slender, pendulous, and tripinnatifid, somewhat resembling those of *T. angustatum*, but always longer and broader. In exsectum they are oftentimes 10 or 12 inches in length, and nearly 6 inches in width; the segments are finely divided, and vivid green. It is a native of Southern Chili and Juan Fernandez.

T. TRICHOIDEUM.—This most exquisite plant is plentiful in Jamaica and various other places in the West Indies, and is usually looked upon and treated as a stove species. I have, however, received it from considerable elevations in New Grenada, where it grows tall and stately, and this form succeeds admirably in the temperature here recommended. Its fronds, which are produced from a creeping rhizome, are lanceolate in shape, tripinnate, the segments being very narrow and delicate, scarcely thicker than hairs, whilst the colour is vivid green.

T. RADICANS.—This is familiar to most of us by the name of the Killarney Fern, but I fear very little has been left of it in that beautiful locality. I have, however, seen it growing in great abundance in an adjoining county. It is undoubtedly the most beautiful of all our indigenous Ferns; it has a creeping rhizome, and produces fronds from 6 to 18 inches long, broadly ovate in shape, very dense, much divided, and deep sea-green in colour. Of this species there are various permanent forms, such as *T. radicans* var. *Andrewsii*, *T. radicans* var. *concinnum*, and *T. radicans* var. *dilatatum*, all of which differ in habit, breadth of frond, or divisions of the fronds, and all possess a peculiar beauty of their own. This species delights in heavy shade. It seems to be widely distributed over both hemispheres.

LEPTOPTERIS SUPERBA.—It is impossible to describe the elegant beauty of this plant, which must be seen to be understood and appreciated. Its caudex grows erect with age, becoming quite a stout stem, supporting a crown of dense ovate-lanceolate fronds, from 10 to 20 inches in length. The segments are finely divided, beautifully undulated and crisp, and of a brilliant sea-green. The points of the segments curl upwards over the surface of the fronds, which thus acquire the appearance of a beautiful Ostrich feather. It enjoys deep shade, and succeeds admirably in a Wardian case. It is a native of New Zealand.

L. HYMENOPHYLLOIDES.—This is equally beautiful as the preceding, although in a different way. Its caudex is erect, and the fronds from 1 to 2 feet or more in length, triangular in outline, twice divided, pellucid, and deep green. It is a most elegant plant for a Wardian case.

L. INTERMEDIA.—This, which at present is a rare plant, is of

quite as robust growth as the last-named kind; and to the somewhat triangular-shaped frond of *L. hymenophylloides*, and its pellucid character, it unites the peculiar curled and crisp appearance of *L. superba*, thus being exactly intermediate, and is probably the connecting link between the two, which are, no doubt, but the extreme forms of one species. It is a native of New Zealand. G.

(To be continued.)

SPIRÆA JAPONICA.

This is one of the most beautiful of all forcing plants for spring flowering, but it is something more than that; it blooms freely when planted out in a warm sandy border, and is extremely pretty. It is largely grown both in Holland and Belgium for forcing, and its roots are imported into this country about this time of the year in large quantities. It is only within these last few years that it has attracted attention, but even in that short period it is grown by the thousand by many of our London market growers and florists. In habit it is very compact, and in fresh greenness of colour it is unrivalled. Its flowers, which are multitudinous, are individually small, white, and borne on erect branched spikes. Out of doors it succeeds in any sandy border in the south of England, and will be found a nice addition to ordinary herbaceous plants. When required for forcing, pot the roots, which are in clumps, directly they are received, in sandy loam and leaf-mould; separately, if for small pots, but large specimens may be



Spiraea japonica.

formed by placing two or three clumps together in a large pot. After they are potted give them a thoroughly good watering, and then bury them beneath a bed of sand or coal ashes, where they may remain until they are placed in heat for forcing. By bringing them gradually into heat, a succession of this pretty plant may be enjoyed for two or three months early in the year. Its flower-spikes, being light and elegant in appearance, are useful for bouquets or for dinner-table decorations. It is also known as *Hoteia* and as *Astilbe japonica*. B. F. W.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Monstera deliciosa.—From a note in the *Revue Horticole*, it appears that the proper name of this plant (which has also been called *Scindapsus pertusius* and *Philodendron pertusum*) is *Tornelia fragrans*, as it was originally named in honour of *Tornelia*, a Mexican Minister of War.

Dampier's Glory Pea.—Having at times seen notices in *THE GARDEN* of this fine species of *Clianthus*, I beg to say that I have raised nine or ten plants of it yearly, and have flowered them satisfactorily; some of the plants bearing as many as ninety blossoms, prettily ornamented with their characteristic jet black spot or boss. Can anyone inform me whether or not it is an annual? for, after flowering with me, it dies down. It can be raised and flowered, I find, without any difficulty. In Australia it is called *Sturt's Pea*. The New Zealand Glory Pea (*Clianthus puniceus* or *Parrot's-Bill*) is without the black spot, is hard-wooded, flowers the second year, and stands the winters against a south wall. It flowered well with me this year.—THEOPH. LEE.

THE FRUIT GARDEN.

BRANCH PROPAGATION OF APPLE TREES.

THERE is a kind of Apple called *Burr Knot*. I believe it originated in Yorkshire; at least, when I was living in Worcestershire, something more than twenty years ago, a gardening friend brought some branches of this kind from there, which were planted as cuttings, and the whole of them grew. It is a very dwarf-growing, free-bearing kind, and the fruit is of good quality and keeps well. I was looking through the beautiful gardens of Baron Windsor, Hewell Grange, Worcestershire, last February, and I noticed a long border planted with dwarf bearing trees of this kind, that I was told had been raised from branch cuttings. I brought home two or three small branches, and they are alive, and I believe are rooted. Manks Codling is another kind of Apple that may be propagated in this way with the greatest certainty. But the general conclusion I have arrived at is, that no branch that has smooth bark (and where those root-like excrescences are absent) will root. There is, however, nothing new in this mode of propagating certain kinds of Apples, as I have no doubt many of your readers can testify. I saw it successfully practised at least twenty-five years ago, and for raising miniature Apple trees it has the advantage of producing bearing trees at once, that always remain dwarf and fruitful without root-pruning. Whilst I am writing upon this subject I should like to call attention to an Apple called *Woodshill*, that used to be largely grown (and I believe still is) in the neighbourhood of Bromsgrove, Worcestershire. I cannot just now refer to the book; but I believe it was figured in Maund's "Botanic Garden and Fruitist," in the year 1848, when it was stated to be a seedling raised in the parish of Bromsgrove. It is really a first-rate kind, valuable alike for culinary purposes and dessert, and keeps well. I have never met with it elsewhere, neither can I find it in any catalogue at hand this moment—not even in Scott's "Orchardist." I should think Mr. Smith, of Worcester, would know something about it. Knowing its good qualities, I secured some grafts, and shall shortly be able to test its merits here. *Court-penduplat* is another Apple that is not half so much grown as it deserves to be. It very rarely fails to bear well, as, in consequence of its late-blooming habit, it generally escapes the spring frosts. It is a fair-sized, crisp-flavoured, high-coloured fruit, and one of our best late keeping Apples. E. H.

AUTUMNAL PEARS.

As the summer Pears are now past, I think it may be useful to many of your readers to give them a list of a few of the very best autumn sorts. I however, will only give comparatively new kinds, as most of the old sorts are pretty well known, and parties may wish to add something new to their collections. The following kinds have been all proved here and found to be of the very best description, they may not, however, prove so good on other soils and in other localities, as with me. My soil is a fine sandy loam, upon a deep sandy sub-soil, and we are situated about sixteen miles from, and about 500 feet above the level of the sea, with a fine open exposure to all the winds that blow, consequently, although geographically in a favourable position, our trees are rendered hardy by their open exposure. I may also say that all the sorts described below were produced upon trees worked upon Quince stocks, hence the flavour, &c., may be found different from that of sorts worked upon Pear stocks. Of this I will give one instance, out of an hundred—the *Pear Rokeby*, grown this season upon a Pear stock, was uneatable, whilst grown upon a Quince it was really very good, and would have been pronounced by most people to be a different kind. The following might be found in some instances to follow the same rule.

Dr. Meniere.—This, which is just now ripe, is a fine large handsome sort with delicious melting, sugary, flesh, and a delicately perfumed flavour. It is quite new and was raised by M. Leroy, of Angers, in 1864. I had trees of it from him in 1870. It is a good bearer and the tree grows freely upon the Quince.

Doyenne du Comice (*alias* *Beurré Robert*).—Although not properly speaking an early autumn sort, as it generally comes in in November I have given it here on account of its intrinsic value as one of our very finest sorts. It is now so well known as not to require further description than to say that it is thoroughly melting, very juicy, sugary, and exquisite. It grows strong upon the Quince and bears well.

Doyenne Robin.—A large and noble fruit, which, it will be well to say, is not like *Doyenné Robert*, which is a synonym of *D. du Comice*. I introduced it in 1860, but it had been in cultivation on the continent since 1850. It is melting, very juicy, sugary, vinous, with a refreshing and agreeable aroma. It grows and bears well upon the Quince and is a very desirable sort.

Duvergnies.—This beautiful and fine Pear was raised by Van

Mons about 1822, but it is not much known in this country. It is melting, with an abundant rich, sugary, and vinous juice and an exquisite flavour and aroma. The tree grows middling upon the Quince and bears abundantly. It has many synonyms, as almost all the best Pears have.

Eugene des Nouhes.—A nice new Pear introduced by me in 1865. It is only second size, but with a delicious and delicate, perfumed, melting, and sugary flesh, and an abundant juice. The tree grows freely upon the Quince, and bears heavy crops.

Ferdinand de Lesseps.—A second-sized delicious new Pear, with a fine-grained, very melting flesh, and an abundant, rich, sugary, acidulated, and exquisitely flavoured juice. It was raised by M. Leroy in 1864, and imported it in 1868. It is well worthy of cultivation. It ripens about the end of October or the beginning of November.

Fondante de Charneu.—This large and fine autumn Pear is supposed to be of Belgian origin, but by whom raised it is not, I believe, known. It is very melting and sweet-scented, with a most abundant juice, very sugary, and acidulated, with a fine savoury perfume. It grows middling on the Quince, on which it bears heavy crops.

Fondante du Comice.—One of the finest and best of Pears, it deserves to be in every garden where fine fruit is a desideratum. It has a very melting flesh, very abundant, very sugary, vinous, deliciously perfumed, and rich aromatic juice, and being of large size, and the tree a good bearer, it recommends itself to every one's notice.

Fondante de la Roche.—A rich, delicious, melting sort, with very abundant sugary, acidulated, aromatic juice, and an agreeable seckel flavour. I introduced it in 1865. Although here it is delicious and rich from a Quince stock, I would nevertheless not assert that, under other circumstances, it would prove equally fine.

Frederic de Wurtemberg.—This noble Pear was raised by Van Mons, and named by him in honour of the then King of Wurtemberg. It is, without doubt, one of the finest Pears we have; but there is great confusion regarding it. I have received three different sorts under the name, but soon found that two of them belonged to other sorts. The true fruit is very large, regular, pyriform, very handsome, and delicious. I need not here go more into its history; suffice it to say, that any one procuring the sort true will have added a gem to his collection. It ripens from the middle of September to the middle of November.

General Todtleben.—Like the preceding, this is a noble and delicious fruit, about the same size and shape. The fruit, when peeled, is tinged with rose, and the flavour, &c., is all one can wish. It, however, produces two sizes of fruit; the small size is not equal to the larger, generally speaking. It keeps well after beginning to ripen; some of the fruits coming to maturity a month or six weeks later than those that become ripe first; and some of the fruits remain quite green in colour whilst others are finely tinted with light crimson. It has been confounded with the Triomphe de Jodoigne, a very different sort—not nearly so good.

Gregoire Bordillon.—This is, as far as I know, the very largest and very finest very early Pear. It ripened here in 1870 in the beginning of August; this year, in September (1870 was a very warm season). It usually ripens in the end of August or beginning of September, before the Williams's comes in. To this last it is a great rival in size, earliness, and quality. Under good circumstances it will reach over 1 lb. in weight, and its exquisite flavour and perfume cannot be surpassed. It was raised by that king of pomologists—M. André Leroy, and should have borne his name, as I think it would perpetuate it for centuries to come. It fruited first in 1866, and I received trees of it from M. Leroy in 1869, which bore here in 1870 and 1871. It does well upon the Quince.

Jules Bivort.—This is, I think, the finest of all M. Gregoire's Pears raised by him at Jodoigne, Belgium, large, handsome, and excellent, with a fine-grained, very melting flesh, and an abundant, rich, sugary, and vinous juice, and exquisite aroma. The sort has several synonyms, which only attest its excellent qualities.

Madame Elise.—This large and handsome sort was a posthumous seedling of Van Mons, and did not fruit till several years after his death; it is, without doubt, one of his best productions for beauty, fertility, and quality. The flesh is of a yellowish tint, fine, and melting; juice excessively abundant, sparkling, and sugary, with a delicious and savoury aroma. The tree grows well upon the Quince, and the fruit ripened here in 1870, October 15; this season it will be a few days later. I had it in fruit in 1870, 1871, and 1873 and it has always been good.

Napoleon III.—A Pear deserving the name of the great man it bears; it is quite new, and I obtained it in 1870. The flesh is very melting, and the juice excessive, following the knife as it is peeled, and the flavour is rich and savoury, with a fine vinous and sugary

taste. It first fruited with its raiser, M. Leroy, in 1864, and deserves to be generally cultivated as a fine and desirable early sort; here it ripened the last week in August.

Nouveau Poiteau.—Another of the seedlings of the indefatigable Van Mons, which fruited for the first time a few months after his death. It is large and handsome, the flesh excessively fine and melting, with a rich and delicious juice and fine savoury flavour. In October, 1870, I had it in fine condition, and considered it then, and do so now, Al in every way. It bears freely and abundantly upon the Quince.

Pierre Pepin.—A handsome, good, and quite new Pear, introduced by me in 1870 from M. Leroy, who raised and named it in honour of his friend, M. P. Denis Pepin, once the superintendent of the hardy collections in the Garden of Plants, and by whose kindness I was able to enter that establishment as a student of botany, &c. The variety is worthy of the name it bears, being fine-grained and melting, with an abundant sugary, perfumed, and agreeable juice.

ARE DWARF APPLES DESIRABLE?

THIS question is now frequently asked, and by many experienced horticulturists. They will not pay for market purposes, says the *Tribune*—that is conceded on all hands; but, in the private garden, nothing in the way of fruit trees is more ornamental than a finely-formed specimen of dwarf Apple tree in full bearing. The fruit is always of larger size and more beautifully coloured than when grown on the usual free root; and, therefore, for exhibition purposes they must excel. Some growers prefer their trees worked on the Paradise Apple, thus making a smaller tree, and one that is more readily kept within proper bounds; but, says the nurseryman, the plants are so small and trifling that our customers want something more showy for their money, and we are in consequence obliged to use the Doucin stock, which enables us to grow a larger tree within the same space of time. But this larger size is at the expense of quality, for nothing but severe root-pruning will keep them within proper bounds. Thinning out the fruit is an absolute necessity; bearing in mind that we want only extra fine specimens, therefore the inferior-sized fruit must be taken off before we commence removing those that are well-shaped. Now, what kinds shall we plant? The most satisfaction is derived from summer and autumn varieties, as we grow them for pleasure more than profit, and only those should be selected which are handsome in appearance.

The Cracking of Fruit by Rain.—Almost everyone has noticed that juicy fruits such as Plums, Peaches, Gooseberries, Tomatoes, etc., will become cracked by rain. This phenomenon has been of frequent occurrence during the past season. The cause is thus explained by the *American Agriculturist*, who thinks that it is properly attributed by Boussingault to osmose. If a bladder filled with syrup be immersed in a vessel of water, the water will, after a while, become sweet; the syrup passes through the membrane of the bladder into the water, and correspondingly the water passes into the interior of the bladder. But this interchange is not an equal one; the lighter liquid—the water—passes in many times more rapidly than the heavier liquid—the syrup—passes out. The consequence will be that the bladder will be distended to its utmost, and at length burst. This is a general law, that where two liquids of unequal densities are separated by a membrane, whether animal or vegetable, they will interchange, the weaker liquid passing more rapidly than the denser one, and this will be kept up until the liquid upon both sides of the membrane is of the same density. A ripe Tomato or Plum may be considered in the condition of the bladder of syrup. The rich juices of the fruit correspond to the syrup and the thin membrane which forms the skin of the fruit represents the bladder. When the ripe fruit is kept constantly wet with water by rain, osmose takes place, and the water passing through into the fruit distends the skin, which, not being very strong, is soon ruptured. If the fruit were to be surrounded by a liquid denser than its juices, it would, instead of expanding and breaking, shrink, and the skin become shrivelled. When Strawberries or Currants are sprinkled with sugar, a syrup is soon formed by some of the juice of the fruit, and this being considerably denser than the juices of the berries they are soon flabby and shrivelled.

Plan for an Ornamental Orchard.—I have five acres of meadow land, rich loam on a clay sub-soil adjoining the kitchen-garden and lawn, and I shall be obliged by any hints as to planting it as an ornamental orchard, one giving us a supply of choice fruits, and affording us a pleasing object from the house. I should also like it to serve as a screen to shut out some adjoining houses. Any hints from any of your readers who have devoted their attention to the subject will be very welcome to me.—W. F., *Hamstead.*

THE GARDEN IN THE HOUSE.

DINNER-TABLE DECORATIONS.

For the decoration of the dinner table I have just been using berries of the larger forms of *Crataegus*, *Cydonia japonica*, and Mountain Ash, and find them very effective arranged loosely, with a few strips of fresh green Ivy and bright crimson-tinted autumn foliage. I have also obtained bunches of bearded Wheat, Barley, and Oats, which look very well in company with a few green leaves, berries, and Fern fronds. A slender spray of common Wood Ivy grown in wet sand has served for the stem of my little March stand for the last six months, and is now as fresh and vigorous as when gathered. The slender branches of the Virginian Creeper are now of a brilliant-crimson colour, and contrast well with yellow *Crataegus* berries and the fresh green

soup-plate filled with sand, into which a few *Chrysanthemum* flowers or late Rose blooms may be inserted, the whole being finished off neatly with a few sprays of any light Grass and Ferns fronds or *Glycine* leaves. A small spike of Pampas Grass makes a noble plume for the centre, the rosy variety being specially beautiful. I find the common Male Fern (*Lastrea Filix-mas*), which grows in our woods and hedges, very useful where exotic kinds cannot be had, and the Lady Fern (*Athyrium Filix-femina*) and fronds of the common Blechnum are even more effective and acceptable where tender species are not at hand. The Trumpet Lily (*Richardia æthiopica*), than which few other plants associate better with statuary, is a great favourite of mine, its graceful and classic outlines being unrivalled, and it grows and flowers very freely all through the winter if kept moist. I have only half a dozen plants of it, but they never fail to



Group of Dinner-table Decorations.

foliage of *Glycine sinensis*. The leaves of the last-named plant are as fresh and as green just now as the choicest Ferns, and I find them very useful in autumn. I liked the prize arrangement of Grasses and Ferns mingled with a few flowers which appeared in your columns a week or two ago; but I have just been improving on it—at least, I imagine I have—and the result is shown in the accompanying sketch. I have only one March stand, so I have arranged the side groups of Ferns and Grasses in old soup-plates filled with wet sand. Of course I took care to conceal them with Fern fronds, and to do this I had to place the Ferns closer together than I should have done had I possessed glass dishes. I have bought as many ornamental Grasses for a few shillings as will last me for the winter. Immortelles or Everlastings I grow from seed sown every spring, and these come in usefully during the winter, when other flowers are scarce. A very pretty little arrangement for a small table is a flat dish or

produce two or three crops of flowers during the winter and spring months. Left on the plant, these last for weeks, and I have kept cut blooms of this Lily for at least a fortnight in charcoal and wet sand. Of course, I do not mean to maintain that the decorations which I now recommend are superior to those formed of choice Ferns, Orchids, and the flowers of many other exotics, but I venture to think that some of your readers, who are fond of flowers, would not object to use some of the simple and pretty combinations I have here suggested. In spring I get plenty of Snowdrops, Narcissus, Hepaticas, Crocuses (both yellow and purple kinds), and occasionally a few buds and flowers of the common China Rose, which flowers all the year round, trained up against a sunny wall, on a warm border. Blue Hyacinths from the woods are also very pretty by daylight, but are not effective at night. Arrangements of spring flowers and dried Grasses, with a few Fern fronds, are not to be despised.

MR. R. H. VERTEGAN'S NURSERY, EDGECASTON.

THAT within a mile and a half of Stephenson Place, Birmingham, Mr. Vertegans, of the Chad Valley Nurseries, should have been able to make a most effective floral display during the past few weeks, notwithstanding certain atmospheric conditions that can scarcely be anything else but inimical to the well-being of bright flowers, speaks much for the progress of horticultural enterprise. The little semi-circular garden in front of his dwelling-house and shop has been a-glow with many brilliant hues, tempered by the association of soft and delicate tints, and the pleasant effect they produced has been worked out with common material arranged with much taste and skill. The best part of the semi-circular garden at the Chad Valley Nurseries is formed of four broad bands or beds, two on the right hand and two on the left of the walk leading from the main thoroughfare to the front door of Mr. Vertegans's residence and parallel with it. These beds are edged with Box, and there are narrow gravel paths on either side of them. At the main thoroughfare end of these beds, they terminate on each side of the walk in a bold mass of *Silene pendula*, that has a telling hue of glowing pink when at its best. These beds were carpeted with red and pink double Daisies, or with the pretty variegated form known as *Ancubæfolia*, as thickly studded with flowers as it was possible for Daisies to be. Along each bed were four circles, the outline formed of Golden Feather *Pyrethrum*, and carpeted with either *Myosotis dissitiflora* or *M. sylvatica*, each furnishing a disc of radiant blue; and above the blue, a canopy of some bright-hued Tulip. The Tulips used in the sixteen circles were single varieties, as Canary Bird, pure yellow; Scarlet Van Thol, Rex Van Thol, Yellow Pottebakker, Prince Achigne, and Silver Standard—all very fine indeed, and most effective; and such double varieties as Couronne Pourpre, Gloria Solis, Tournesol, and Rex Rubrorum. Each bright-hued Tulip harmonised well with the surroundings, and out of these simple elements there had been constructed a flower garden fit for a royal palace. On either side were spaces where white double Daisies had been planted in diamonds, formed with a line of pink double Daisies, and planted with mixed Tulips. The whole is edged in by Laurels and other evergreen and flowering trees and shrubs, and, at its very best, no one could say this pleasant little garden was offensive by the presence of startling colours. In order that the Tulips should be effective, Mr. Vertegans plants a disc wholly of one variety, and plants them thickly. The Tulips used by Mr. Vertegans each spring are increased by means of offsets each year. He has quite a plantation of these, and those that flower this season are selected for planting next autumn, to bloom the following spring, which they do as well as the best imported Dutch bulbs. Any one using Tulips for spring display can obtain a stock in this way, if the soil be fitting and the offsets carefully looked after. In a sheltered spot close by this garden could be seen beds of *Spiræa japonica* coming into flower, and looking as well as could be desired. Mr. Vertegans never imports, as he finds he can grow enough of this useful plant for forcing purposes if the roots be looked after at the right time. The clumps are divided immediately after blooming, and are then allowed to remain in the beds for two seasons, by which time they are fit for any purpose. The beautiful *Lithospermum prostratum*, growing in masses on rockwork and in borders, was quite grand, its peculiar hue of indigo blue being very effective. I never before saw *Trollius europæus* flower so well as it does with Mr. Vertegans at Chad Valley. The cool moist climate of Birmingham appears to suit it exactly, and it is a grand spring-flowering plant. *Rhododendrons* do well at Chad Valley, and so extensive has Mr. Vertegans's collection of them become, that he has an annual show of them at the Edgebaston Botanic Garden. Following in the footsteps of his friend, the late Mr. C. J. Perry, Mr. Vertegans grows his dwarf Roses on the pegged-down system, and nothing can look and promise better than they do this season. Mr. Vertegans stated that for some years past he has grown seedlings of the Dog Rose, and worked varieties on them as dwarfs. A general nursery stock is cultivated at Chad Valley, and the glass structures are frequently being added to. A choice collection of Palms occupies one of them, and others contain choice kinds of soft-wooded plants.

R. D.

AN, how poor and formal are statues, and terraces, and vases, and ribbon-patterns, and geometrical designs, and bedding out, when compared with nature's handiwork! and though, perhaps, never since the days of the grand old gardener has ornate horticulture attained so great a splendour, what true lover of flowers is really satisfied with our gorgeous modern gardens? We treat them, for the most part, as a child with a new box of paints: his pictures, all the most glaring colours, are crowded together; and the eye, dazzled and bewildered, yearns for that repose and harmony which in nature, whether in the few flowerets of some hidden nook, or in the fiery autumnal grandeur of some mighty forest, diffuse perpetual peace.—*A Little Tour in Ireland.*

THE FLOWER GARDEN.

SELECT PENTSTEMONS.

To Pentstemons, as border flowers, more attention is being paid every day, and deservedly so, for few flowers have undergone greater improvement than these have during the last few years. The flowers in the best kinds, instead of drooping, are tolerably erect, and very different from those of the old or *Gentianoides* style. I certainly prefer those with pure white throats to any others, as they are the most attractive and beautiful, although some of the others are also very pretty and well worth growing. By having two crops of cuttings, one in autumn and one in spring, a fine display of bloom can be had from June to October. Cuttings, struck in autumn, should be planted out at the end of March of the following year, and those struck in spring should be planted out in June; the autumn-struck cuttings will flower from the middle or end of June until the end of August, when the spring crop will be just coming into flower, and will last until the middle of October. I have this year selected the following as being some of the very finest in cultivation, viz.:—

<i>Calice</i> .—Bright purple, throat white, veined with brown.	<i>Standard Royal</i> .—Scarlet, throat white.
<i>Wm. M. Alexander</i> .—Bluish-purple, throat white.	<i>Picciola</i> .—Deep crimson, pure white throat.
<i>Albert Turpin</i> .—Bright rosy-purple, throat white.	<i>Wm. Chas. Saunders</i> .—Red-scarlet, throat white, veined with red.
<i>W. E. Gableton</i> .—Purple, throat white.	<i>George Sand</i> .—Lavender-blue, throat white.
<i>Victor Hugo</i> .—Bright rose, throat white.	<i>Henriette de Montesquieu</i> .—Deep pink, throat white.
<i>Agnes Laing</i> .—Purple tube, lighter lobes, pure white throat.	<i>M. Chabert</i> .—Bright rose, throat white.
<i>Bonne Villapaise</i> .—Scarlet, throat white.	<i>Marie Held</i> .—Lavender blue, throat white, pencilled.
<i>White Beauty</i> .—White.	<i>Thos. Moore</i> .—Bright rosy-purple, pure white throat.
<i>Black Knight</i> .—Blackish-purple, throat white.	<i>Henri Demay</i> .—Purplish-crimson, throat white.
<i>Bessie Anderson</i> .—Rosy-carmine, pure white throat.	<i>Masterpiece</i> .—Carmine, throat white, veined with red.
<i>Compteur</i> .—Maroon-purple tube, lilac lobes, throat white.	<i>La Fontaine</i> .—Scarlet, pure white throat.
<i>Apollo</i> .—Bright crimson, throat white, streaked with carmine.	<i>Joan</i> .—Rosy-scarlet, pure white throat.
<i>Calliope</i> .—Carmine-scarlet, rosy lobes, throat white, veined with crimson.	<i>Jules Simon</i> .—Lavender-blue, throat white.
<i>Cato</i> .—Crimson-carmine, scarlet lobes, throat white, veined with purple.	<i>Bridesmaid</i> .—White.
<i>Eclipse</i> .—Crimson-claret, pure white throat.	<i>Lady Constance Lindsay</i> .—White, tinged with pink.

R. H. B.

THE NEAPOLITAN VIOLET.

THIS is one of those old-established favourites which no amount of rivalry can displace, and which still maintains its supremacy as the Queen of Violets. It is grown in nearly every garden, but with very variable success, as, in the majority of places, it is only seen blooming in perfection in the spring, while in others it is full of bloom during the six duldest months of the year. Last winter we began gathering its blossoms in the first week in October, and continued to do so regularly every morning until May. During November, December, and January we used them in large quantities for breakfast-table decoration—a small glassful to each guest—and, used in that way, they certainly have a most refreshing appearance. The cultivation of this Violet is very simple; but, like most other things the amount of success will be in proportion to the care and attention bestowed on it. Our system is to select single crown runners in April, and to plant them about a foot apart on a shady border. We keep them well watered in dry weather, frequently hoed amongst, and every runner is kept cut close off until they are transplanted into their winter quarters. By the end of September they will be covered with bloom-buds, and should be very carefully lifted and re-planted in frames with a due south aspect, and raised well up at the back, as every ray of sunlight must be utilised in the winter to improve the colour of the opening blooms and to help on the buds. We fill the frames nearly full of stable manure, which gives a bottom-heat sufficient to make the

plants get thoroughly established before winter, and we plant sufficiently high, so that, when settled down, the blooms almost touch the glass. The lights are kept quite off, except during rainfall, when they are tilted up at the back, or during sharp frost, when they must be well covered. To keep the blooms clean, we cover the soil with cocoa-fibre, which gives the whole bed a neat clean appearance, and helps to retain the moisture, as the less water given during winter the better. Any amateur having a Cucumber frame to winter them in, and a nice shady border to grow the plants in in summer, will find this an excellent plant to grow; and, if treated as just described, success is sure to be the result.

J. GROOM.

Henham.

THE SCARBOROUGH LILY.

(VALLOTA PURPUREA.)

ALTHOUGH this is a well-known and showy bulb, it is not so generally cultivated as it deserves to be. It blooms freely during the summer and autumn months, and is then very ornamental in the greenhouse or conservatory. Being an evergreen bulb, it should not be dried off during the winter,



Scarborough Lily (Valloia purpurea.)

or the plant suffers injury. It requires very little heat, and will grow and bloom in a cottage window for years. While growing it requires abundance of water, and it should be potted in a compost of loam, leaf-mould, and sand. It is readily propagated by means of offsets, and deserves to be grown in quantity for autumn flowering and for general decorative purposes.

B. W.

MICHAELMAS DAISIES.

IN addition to the species of Aster recommended at p. 305 as being most worthy of a place in gardens, I noticed two or three kinds at Kew this week which struck me as being very ornamental and distinct, viz., *A. Drummondii*, a graceful plant, in aspect somewhat like *A. turbinellus*, but not so dense, and only about 2½ feet high. Its flowers also resemble those of *A. turbinellus*, but are smaller. A kind named *A. oblongifolius* is also a distinct flowering plant, producing an abundance of small blue flowers in clusters. It grows about 3½ feet high, and makes a capital border plant. *A. Chapmanii* is likewise a handsome free-flowering kind, which I have not noticed at Kew before, or seen in any other collection. It attains a height of about 4 feet, is thickly studded with pale blue flowers an inch or more in diameter, and much resembles *A. Shortii* in habit and bloom, though quite distinct from that kind in its leaves, which are very long, lance-shaped, and of a light green colour. This I consider to

be one of our very best late blooming Asters. *Diplopappus linearifolius*, a plant closely allied to the Asters, is also blooming freely at Kew. Its stems, which are woody at the base, are very leafy, from 10 to 20 inches high, and the flowers are of a pale violet colour, and produced freely at the point of each stem. It is a capital plant for rock-work or for the front margin of mixed borders, associated with such Asters as *versicolor*, *Reevesii*, &c. T. S.

Broken Spikes of Pampas Grass.—Can any of your readers account for the following, or suggest a remedy? I have a fine plant of Pampas Grass of a good white colour, and opening early. It has some twenty or more spikes of bloom on it this year, and almost daily one of these is broken off and there seems to be an inclination to curve where each is broken, instead of growing up quite straight, and there are one or two cuts across the stem, apparently not done by an insect. There has been no wind to occasion this, and no other plant of Pampas has lost a single spike. It is particularly noticeable as this plant is the whitest, and has the largest blooms of any in my garden.—J. H. W. T.

The Seed of *Gilia coronopifolia*.—It is well known to botanists that the seeds of certain Polemoniaceae plants, when moistened with water, become mucilaginous, and throw out from the testa an immense number of minute spiral filaments. This phenomenon is well seen with the seeds of *Collomia coccinea*; it occurs also in many species of *Gilia*, and among others in *G. aggregata*, better known as *Ipomopsis aggregata*. But it is not a little singular that, in the closely-related *G. coronopifolia* (*Ipomopsis elegans* of Michaux), the seeds are neither mucilaginous nor spirilliferous—a fact which was, I believe, first noticed by Professor Asa Gray in his "Monograph on the American Polemoniaceae." These two species may, therefore, be readily distinguished from each other by the aid of a few drops of water and a microscope of low power. All the varieties of *Ipomopsis* at present in cultivation are, I believe, referable to the last-named plant, *I. elegans*; but *I. aggregata* will probably not be long absent from our gardens.—T.

Rare Border Plants now in Bloom.—I send you specimens of several interesting flowers now out in my garden. *Encelia californica*, light yellow with a dark centre, and *Haplopappus laricifolius* are, I believe, new to cultivation. I raised them both from seeds procured from California several years since through Mr. Thompson, of Ipswich. The *Haplopappus* has never flowered before, and the *Encelia* but poorly. They tell me at Kew that both are rare. The *Haplopappus* forms a low shrubby little bush, and is now covered with little yellow flowers, which are just beginning to expand. The *Encelia* forms a shrubby bush some 5 feet high, and will be handsome if the weather allows it to expand all its blossoms. Neither of them is quite hardy with me, and I take them into the greenhouse in winter. *Actinomeris virginiana* and *Aster amygdalinus*, which are both now very handsome, are quite hardy. *Arctotis aureola*, which has large bright orange flowers, is one of the plants which the late Mr. Augustus Smith grew so well at Tresco Abbey. It is not quite hardy here, but forms a handsome summer and autumn bedding plant. The purple Bergamot, *Monarda purpurea*, has been one of my gayest plants for weeks. *Eurybia ramulosa* is quite hardy in the south of England, but must be protected in winter here. *Helianthus giganteus*, which I also raised from Mr. Thompson's Californian seeds, is now overtopping a wall 10 feet high with its handsome flowers. *Aster longifolius formosus* (alias *A. trinervis*, and Madame Soynuce), of which I also send a specimen, is quite a gem, its handsome mauve-coloured flowers being produced in the greatest possible profusion. It is a plant which should be in every garden.—H. HARPUR CREWE, Drayton-Beauchamp Rectory, Tring.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

***Vernonia noveboracensis*.**—This vigorous growing perennial is now producing rosy-purple flowers in abundance at Kew. Although the stems are somewhat naked, it might be used with good effect in shrubberies along with such Asters as *Novæ Angliæ*, or among vigorous perennials in semi-wild situations.—T.

***Rudbeckia Newmannii*.**—This name having occurred in some recent numbers of THE GARDEN, I shall be glad to be informed of the authority for it, as I find no such species recorded in any work at hand, and it is not recognised at Kew. I have twice received specimens so named, both differing from each other, one being the well-known *R. speciosa* (Wender), the other *R. laciniata*, or one of its forms.—W. T.

A New Hardy Bamboo.—Under the name of *Bambusa sulphurea*, M. Carrière describes a perfectly hardy species of Bamboo now growing in the Jardin l'Acclimatation, in Paris. In general appearance, it resembles *B. viridiglaucescens*, but is not so vigorous; the stems are somewhat spreading, and of a fine sulphur-yellow colour; the leaves are of a light-green on the upper surface, and glaucous underneath. M. Carrière states that he has never known this species to vary. Unlike the other yellow-stemmed kinds, which are very tender, it requires no shelter in winter. It was first introduced about 1865.

COLOURS, ODOURS, AND HABITS OF FUNGI.

EVERY one (says Mr. Worthington Smith in *Cassell's Magazine*) who has rambled in the woodlands in October must have noticed the large number of crimson-topped Toadstools, such as are generally selected by painters to accompany little delicate groups of autumn flowers and fruits; and there is seldom an exhibition of pictures wherein a painting of these crimson-topped Agarics does not appear. These plants mostly belong to a distinct tribe called *Russula* (on account of the red tints of its members), and nearly all of the species are virulently poisonous. The most striking in colour is certainly *Russula emetica*, in which plant the top is of the most intense and vivid carmine; it is somewhat uncommon, and highly poisonous, and it may be known from all other species by its flesh being always red under the skin, which readily peels off. By a most unfortunate mistranslation by Berkeley, in his "Outlines," of the original Latin description of this plant, the flesh is by him said to be white under the skin, which is contrary to the fact, and in the more recent "Handbook" by Cooke this error is copied. Far more common is a smaller crimson Agaric, known as *Russula fragilis*. It breaks with a touch, and its crimson colour often passes into rose and purple, and it is equally poisonous with the last. Amongst other red species, we get *R. sanguinea*, blood-red and very acrid; *R. rosacea*, rosy-red and poisonous; and *R. rubra*, highly poisonous—all these plants have the gills (or lower surface) white in colour. Now there is one, and one only, crimson-topped Agaric with the lower surface buff-yellow, and this one is *R. alutacea*, a delicious esculent. A common crimson Toadstool in Birch districts is *Agaricus muscarius*. It is soft to the touch like crumb of bread (not harsh and rigid, like all the *Russulæ*), and its top is covered with white or yellow warts. Its properties are highly narcotic, intoxicating, and poisonous. The green colour so common amongst flowering plants is almost unknown in Fungi, and when it does occur it is of a peculiar verdigris hue, and uninviting to the taste, but almost invaluable to the artist from its peculiarity of shade. Such a green-tinted plant is *Russula virescens*, which is, strangely enough, a valued esculent. It is, however, closely allied to a highly dangerous green species in *R. furcata*. A close ally (dark green in colour) of the meadow Mushroom itself is found in *Agaricus arvensis*. This deleterious Fungus is found on and about stumps in woody places, and is not uncommon. Another green-tinted, fragrant, and, moreover, delicious Toadstool for the table is met with in *A. odoratus*. So diverse and beautiful are the hues to be found amongst Fungi, that perhaps there is no tint known, however splendid, but it may be seen adorning some Fungus. The *Hygrophorus* group amongst Agarics is so named on account of the watery consistence of many of the species, and it is particularly to this group that surpassing brilliance of colour belongs; the species are all more or less common, and their place of growth is in pastures and grassy places. Among crimsons there is the noble *Hygrophorus puniceus*, *H. coccineus*, *H. conicus*, and others; but the golden-yellow plants among this group are truly resplendent in tint; such are *H. obscurus*, *H. chlorophanus*, *H. ceraceus*, and *H. turandus*. These curious plants, when seen in abundance amongst the short Grass of downs, look like veritable flakes of fire. Not less worthy of remark in this group are the species notable for their dazzling and perfect whiteness, as *H. virgineus* and *H. eburneus*; whilst in *H. psittacinus* we find the exact blending of rich green and yellow so striking in some parrots, hence its specific name. There are several of the rigid *Russulæ* before mentioned having their upper surface tinted with the purest shades of yellow, the most noteworthy being *Russula aurata* and *R. ochroleuca*. Few Fungi are more frequent than *Peziza aurantia*; it is not uncommon in the paths of suburban gardens, and it has even been seen in the Kingsland Road. It forms cups 1 or 2 inches in diameter, of a brilliant orange-yellow, and shines like burnished gold.

Magnificent shades of purple and blue are found in the group known as *Cortinari*, so called from the interwoven mass of fine web-work (like that of the spider) with which, in this genus, the stem is furnished. *Cortinarius dibaphus* has the upper surface tinted with an intensely brilliant and pure purple, whilst the stem is an equally brilliant yellow, suffused with amber. *C. Bulliardi* has the upper surface bright maroon-crimson, the stem amethyst, and the bulb and threads of spawn, in and upon the ground, blood-red. *C. sanguineus* is in every part of the plant intense blood-red. *C. porphyropus* is suffused with a lovely purple-like porphyry. *C. cinabarinus* is tinted with such a vivid vermilion that no artificial colour can imitate it, and *C. cerulescens*, *C. purpurascens*, *C. violaceus* are (as is indicated by their respective names) tinted with various shades of blue, purple, and violet. An allied plant, *C. armillatus*, otherwise entirely cinnamon in colour, is remarkable for having a narrow blood-red line carried like a zone round the stem. Of pure white Fungi there is a large number, and one of these—*Agaricus*

resplendens—cannot be passed without a remark. When met with in any abundance it gives a striking character to the scene. The top is lustrous, white, and silky, and shines like polished silver.

Omitting all the duller shades of brown and grey amongst Fungi, we will now pass on to the black. Every stroller who has walked through a woody place in autumn must have observed rigid Agarics (often overturned and wet) as black as jet; these are specimens of *Russula nigricans*, a common species, and remarkable from the fact that in decay it is the nidus for another Agaric, which grows upon its top. The parasite is *Nyctalis asterophora*, so named because in its turn it is preyed upon by another parasite, this time starry in form. *Hygrophorus metapodius* is jet-black, and many other plants, as *Lactarius blennius*, are very black in colour. Not the least remarkable point in connection with the colouring assumed by Fungi, is the instantaneous change of colour of some species when touched or broken. Gather a specimen of the common *Boletus luridus*; the under surface is dark crimson-red; pass the finger gently over it, and it leaves a trail of Prussian blue; break it, and its white flesh instantly changes at first to bright blue, then ashy-brown. In Fir districts *Lactarius deliciosus* is a common Fungus. Break it, and it pours out milk of a brilliant orange colour, which rapidly changes to an equally brilliant green; this plant, moreover, as its name imports, is a delicious addition to the table. *Lactarius fuliginosus* is also very common; break it, and it turns red. *L. chrysorrhæus*, if broken, turns sulphur-yellow. Both the latter are, however (unlike the first), acrid and dangerous poisons. A snowy-white Agaric is sometimes found in greenhouses, which, when touched, instantly changes colour to carmine. We have confined ourselves here to the mere tints put on by some of the commonest of our more than three thousand species of British Fungi, and we now leave the subject with the knowledge that in this paper we have not even neared the threshold of the study. Of the truly wonderful Fungoid forms we have said nothing. Many are umbrella-shaped, but some closely mimic the brains and mesenteries of animals, some open like stars of the most perfect geometric pattern, and others take the shape of bowls or fonts.

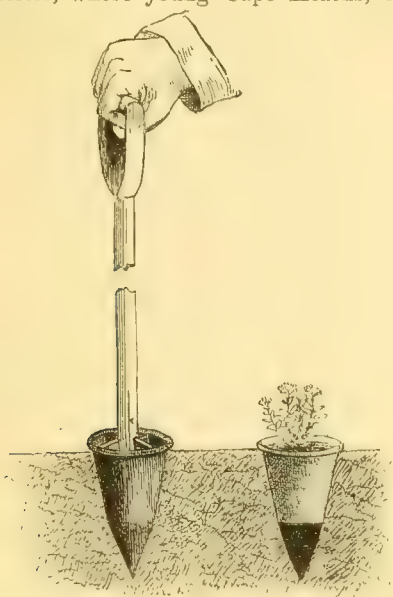
The odours of Fungi are innumerable, and often most singular and potent. *Hygrophorus cossus* and *Cortinarius traganus* (as is indicated by their names) smell powerfully of the larva of the goat-moth, or of the goat itself. *Agaricus incanus* is potent of mice, *A. cucumis* of decaying fish, *Marasmius fetidus* of the most offensive carrion, *A. gloiocephalus* of rotten Beans. Some are fragrant, as *A. fragrans*; others are equally disagreeable, as *Russula fetens*. Again, what an immense field is open to research in the microscopic structure of Fungi—their fruit, and its germination and inconceivable minuteness, upwards of a million reproductive bodies, called spores (which are analogous to seeds), from some species being small enough to be placed side by side on the head of a pin. Yet these atoms can be made to artificially germinate, and the process can be watched under the higher powers of the microscope.

The habits and habitats of Fungi form another vast field of interest. Some Fungi only fix themselves on the top of others, like the Old Man of the Sea on the back of Sindbad; some confine themselves to dead caterpillars, horses' hoofs, damp walls and ceilings, bones, tan, flies, and other diverse things, whilst a whole army of microscopic marauders attack our vegetables, fruits, preserves, and meats, our clothes and books, and even the roof-tree itself, as the dry-rot proves. Many Fungi are terrestrial; a few grow in water, on submerged bodies; others are subterranean, as all the Truffles; and a vast number grow upon trees. Some are solitary, others gregarious; some grow in scattered irregular patches, whilst a considerable proportion grow in circles, in beautifully formed fairy rings, regarding which country folks have to this day such weird beliefs. In short, in spite of its despised name—the Toadstool—the Fungus is a most interesting object in natural history, and well worthy of attention in an autumn ramble.

THERE is one city of the East of biblical and historical renown, which is surrounded, says *Good Words*, on all sides by deserts; but which, to the astonishment of the traveller, who has been toiling for days over burning sands to reach its gates, presents to the eye, as he enters, a wonderful succession of gardens gay with the richest verdure and the most gorgeous blooms. Above that city—the most ancient, perhaps, in the world—above that desert-girdled city, Damascus—towers the lofty Lebanon, with its snow-clad head piercing the fleecy cloud of a summer sky. It is in its lofty summits that the secret of the wonderful verdure lies. There, in those snows that mingle with the clouds, are the inexhaustible fountains of the innumerable rills of water by which, in Damascus, the desert has been turned into a garden, and the wilderness made to blossom as the Rose.

GODFREY'S POT PLUNGER.

This is a useful addition to our garden tools. Its handle, as will be seen, is like that of an ordinary spade, and the base consists of a heavy cast-iron dibber, shaped to make a hole to hold a pot, leaving a vacuum below for drainage purposes, and to prevent worms from entering the pots. This implement is only made to suit 48 and 60-sized pots; but it could be made to suit any sized pot, and the handle might be of any required length. In using it, it should be plunged into the ground up to the rim, giving it a slight turn round so as to throw off any earth adhering to it, then withdraw it, and insert the pot as shown in our illustration. The weight of the implement soon makes the desired hole with but little exertion on the part of the operator, if the ground is at all pliable, and the expedition with which the work is performed soon repays the cost of the instrument. For plunging Tomatoes, Vegetable Marrows, and Cucumbers in frames in market-gardens, before they are finally planted out, this tool would be very serviceable; and in nurseries, where young Cape Heath, hard-wooded



Godfrey's Pot Plunger.

greenhouse plants in general, herbaceous and Alpine plants, &c., are so extensively plunged out of doors in summer, it will be found to be indispensable.

TENNYSON'S KNOWLEDGE OF TREES.

WORDSWORTH, in the supplementary preface contained in the second volume of his works, asserts in the most emphatic way the deplorable ignorance of "the most obvious and important phenomena" of nature which characterises the poetical literature of the period intervening between the publication of the "Paradise Lost" and the "Seasons." It is to be feared that his opinion is, to a large extent, justified by the facts of the case. A very cursory examination of the productions of the poets who flourished during the seventy years referred to will suffice to show how little they were affected by the manifold beauty and grandeur of the visible universe everywhere around them. In this respect they contrast unfavourably, not only with their successors of the present century, which might have been expected, but with those of the two preceding centuries as well. The latter, whose works embrace a period dating back a hundred years from Milton, display, generally, a much more accurate acquaintance with the appearance and phenomena of the natural world, and spontaneousness in the expression of it, than the school of Dryden and Pope, who may be regarded as the most conspicuous examples of Wordsworth's strictures. Of Pope, particularly, it might almost be said that from his writings it could scarcely be inferred that there was much else in existence than courts, and fashions, and scandal—not much, at all events, that was worth caring for. He excelled in the representation of the modish life of the day—its fine ladies with their patches, its fine gentlemen with their periwigs, and its general artificiality. Of nature in its endless continuity, and variety, and

mysteriousness, which has stirred the hearts of men in every age, and kindled many smaller poets into enthusiasm, he knew and cared little, and the trim alleys and botanical distortions of Versailles which he has characteristically described, may be taken as typical of his own inspiration on the matter. It may be worth while mentioning, as a pertinent illustration of these comments, that in his poem of "Windsor Forest," with the exception of a semi-patriotic allusion to the Oak, in connection with ship-building, there is not a reference to a single forest tree, not even to any of those famous historical Oaks which abound in the locality. Nature, and simplicity, in truth, had gone out of fashion, and were not much in vogue again till far on in the century. Darwin, a mere poetaster compared with the genius of Twickenham, is a well-known instance of the opposite defect—of the absence of poetic fire rather than of a taste for the delights of the country. His "Botanic Garden" is a dreary mechanical affair, several degrees worse and more unreadable than Cowley's "Plants," a century earlier. Both are constructed on an altogether erroneous principle. Science is science, and poetry is poetry, and while, as is well illustrated in "The Princess" and "In Memoriam," the scientific spirit may be distinctly present, yet anything like a formal, didactic attempt at amalgamation is certain to prove a failure. Although belonging to an earlier date than the sterile period referred to, George Herbert might also be quoted here as a case of poetic talent of a very genuine kind, yet unaccompanied by much perception of natural beauty or picturesqueness. He has sometimes been likened to Keble, a brother churchman and clergyman, but between the two, in their feeling and apprehension of the wonders of creation, the difference is singular and complete. Herbert's strong point was spiritual anatomy. His probing and exposure of the deceptions and vanities of the human heart, and his setting forth of the dangers of the world to spirituality of mind, is at once quaint and incisive. But of any love or special knowledge of the physical world there is scarcely a trace.* Keble's poetry, on the other hand, quite as unworlily as that of the author of "The Temple," is redolent everywhere of the sights and sounds of nature. The seasons with their endless changes, the motions of the heavenly bodies, the fragrance of the field, trees, rivers, mountains, and all material things, are assimilated, so to speak, into the very essence of his verse. That very world which to Herbert was only base and utterly indifferent, seemed to Keble, to use his own words, "ennobled and glorified," and awakened in his soul poetical emotions of the highest and purest kind. It is unnecessary to enter into much detail in order to show, how much more truly than himself, Pope's predecessors, and especially those of the Elizabethan era, were entitled to the designation of poets of nature. Shakespeare, Spenser, the two Fletchers, Milton, and many others, might be adduced in confirmation. With reference to botany, it is evident that the greatest of the tribe, in his universality of knowledge, flowing over into every region of human research, was well acquainted with the subject in its two-fold aspect—trees and flowers. Many beautiful floral descriptions occur in the plays, and although the arboricultural allusions are less frequent, they are sufficiently numerous to justify the belief that his knowledge was both extensive and accurate. Perhaps the most important passage of the kind is where Cranmer, "dilating on a wind of prophecy," portrays, under the figure of a "Mountain Cedar," the future glories of the reigns of Elizabeth and her successor.† Milton has many striking and appropriate images borrowed from trees. His artistic use of the Pine as a simile for Satan's spear,

to equal which the tallest Pine,
Hewn on Norwegian hills to be the mast
Of some great admiral, were but a wand;

and the comparison of the rebel host to blasted Pines, are fine examples of the poetical transmutation of botanical knowledge. Still finer is the exquisite description in "Lycidas" of the vernal flowers strewn on the hearse of his lamented friend. And, not to multiply quotations further, the vale of Vallombrosa has been immortalized for ever by three lines in "Paradise Lost."‡ In later poetry, not of the present century, Shenstone and Cowper were both genuine lovers of nature, and their works abound with passages relating to rural pleasures and scenery. Cowper, indeed, might be styled *par excellence* the poet of the country. No one ever believed more thoroughly than himself in his own epigrammatic line.

God made the country, and man made the town.
The revolution in the poetical taste of the time, afterwards consum-

* One of his biographers has discovered a solitary verse, on the faith of which he complacently assumes that Herbert "was thoroughly alive to the sweet influences of nature."

† Commentators affirm Ben Jonson to be the author of the lines referred to.

‡ Till on the beach
Of that inflamed sea he stood, and call'd
His legions, angel forms, who lay intranc'd
Thick as autumnal leaves that strew the brooks
In Vallombrosa.

mated by Wordsworth, was mainly initiated by the recluse of Olney. In Shenstone's poems, now, it is to be feared, little read, there are some verses bearing on the subject of this essay which have a curious resemblance to Mr. Tennyson's famous song, "Come into the garden, Maud." We quote eight lines to be found in the piece designated a "Pastoral Ballad, in Four Parts;"—

From the plains, from the woodlands and groves,
What strains of wild melody flow!
How the nightingales warble their loves
From thickets of Roses that blow!

Then the Lily no longer is white;
Then the Rose is deprived of its bloom;
Then the Violets die with despit;
And the Woodbines give up their perfume.

The ring and manner of this is very similar to Mr. Tennyson's composition, and although the measure is a little different, these verses might be interpolated in the modern song without in the least impairing its harmony, or affecting its verisimilitude.

The most distinguished names in the list of the natural poets of the present century are undoubtedly Sir Walter Scott, Wordsworth, and Mr. Tennyson. Of the two former it may be said, in passing, that they have probably done more than anybody else to foster the modern idea of nature, and the love of wild and picturesque scenery. Our business, however, is more particularly with Mr. Tennyson, and with the evidences of botanical knowledge to be found in his works—that part of botany, at least, relating to trees. These allusions, we apprehend, are more numerous, and show more insight and acquaintance with the forms, and processes, and changes characteristic of the inhabitants of the forest than those of any other modern author. His verse in this respect differs from other descriptive poetry chiefly in this, that his notices are not general appellations or similitudes applicable equally to any or all trees, but are specific, exact, and true only in the particular case. Thomson, for example, in the "Seasons," is, in general, curiously vague in his descriptions. He generalises constantly, and presents his readers with broad effects sketched *en masse*, instead of individual details. Such phrases as "sylvan glades," "vocal groves," "umbrageous shades," and the like, frequently occur, doing duty in place of more minute representations. Mr. Tennyson, on the other hand, and Sir Walter Scott and Wordsworth may also be included, pursues exactly the contrary method. His descriptions are, nearly always, pictures of particular places instead of fancy sketches, and the distinguishing features are given incidentally in the course of the narrative. Where, again, particular trees are referred to, it is almost invariably with a phrase or an epithet clenching the description as precisely as a paragraph from Evelyn or Loudon. And, as poetry, these casual, accidental bits of descriptive writing are infinitely more effective than any amount of versified disquisition, of the Darwin sort, on the processes of vegetation. Slight, too, though in many cases they are, they indicate a deep appreciation of the results and tendencies of modern science. In what remains of this paper it is proposed, a little in detail, to adduce evidence from Mr. Tennyson's poems in support of the views we have expressed. It will not be necessary to go over the whole field, and we shall therefore select a few of the more important trees, and see to what extent his notices of them are corroborative of these preliminary remarks. The Ash will be the first example, and the reference in the lines quoted below is to the proverbial lateness of this tree in developing its foliage. It forms part of the prince's song in the "Princess":—

Why lingereth she to clothe her heart with love,
Delaying as the tender Ash delays
To clothe herself, when all the woods are green?

This is a very striking comparison, happily expressed, and, beside serving its immediate purpose, corrects an erroneous notion somewhat popular, that sometimes the Ash and sometimes the Oak is in leaf first. Then, again, in the "Gardener's Daughter," Juliet's eyes and hair are thus described:—

Love, unperceived,
Came, drew your pencil from you, made those eyes
Darker than darkest Fancies, and that hair
More black than Ash-buds in the front of March;

a fact which all observers of the phenomena of the spring months will recognise as accurate.

The Lime seems a special favourite of Mr. Tennyson, so lovingly and frequently does he use it for illustration. There is much imitative beauty in the well-known lines, (also from the "Gardener's Daughter") which form the conclusion of the description of a cathedral city—possibly Peterborough:—

And all about the large Lime feathers low,
The Lime a summer home of murmurous wings.

The giving out of branches close to the ground is a noticeable habit

of the Lime, as it is also, to some extent, of the Elm, particularly in Devonshire. The mode, growth, and the development of the branches are still further illustrated:—

Not thrice your branching Limes have blown
Since I beheld young Laurence dead.

The epithet "branching" refers to another peculiarity—the number and intricacy of the branches in the centre of the tree. On this point Mr. Leo Grindon, a good authority, says:—"So dense is the mass, that to climb a full-grown tree is nearly impossible." The frequent use of the Lime for avenues and walks, a practice still more prevalent on the continent, is very pictorially stated:—

and overhead,
The broad ambrosial aisles of lofty Lime
Made noise with bees and breeze from end to end.

Its spring-time is photographed in "Maud" in a single sentence, thus:—

A million emeralds break from the ruby-budded Lime.

Every student of botany will be able to verify the correctness of this line. The buds are peculiarly red, and the appearance of thousands of them bursting at once is precisely as the poet describes it. Elsewhere, the period immediately preceding the foliation of the trees is sketched with remarkable truthfulness.

On such a time as goes before the leaf,
When all the wood stands in a mist of green,
And nothing perfect.

The Spanish Chestnut, *Castanea*, is not one of Mr. Tennyson's trees; but there are frequent references to the Horse-Chestnut, *Æsculus*. The three Chestnuts in the "Miller's Daughter" will be in the recollection of most readers of his poetry. The appearance of the buds just before emerging from their green covering, and the time of their development, are registered with minute accuracy:—

But, Alice, what an hour was that,
When after roving in the woods
('Twas April then), I came and sat
Below the Chestnuts, when their buds
Were glistening in the breezy blue.

"Glistening" is the exact epithet here. The early foliation of the Chestnut and Elm we find in the exquisite fragment "Sir Launcelot and Queen Guinevere." The lines on the Chestnut are very characteristic:—

In curves the yellowing river ran,
And drooping Chestnut-buds began
To spread into the perfect fan,
Above the teeming ground.

This, and the similar remark on the Elm, corresponds to the order of nature, and is nowhere better or more beautifully exemplified than in Kensington Gardens every April. So far as we have been able to discover, there is only a single line devoted to the Birch. It is to be found in "Amphion," that singular reproduction, in sylvan form, of the mythological legend. It is interesting to notice, by the way, that, in the later editions, the verse in which the Birch is mentioned is omitted, and another substituted. As a whole the latter is doubtless the more musical of the two, but we are sorry to lose the apt and charming characterization of "the lady of the wood." For the curious Tennysonianism we print both:—

The Birch tree swang her fragrant hair,
The Bramble cast her berry,
The gin within the Juniper
Began to make him merry.

* * *
The Linden broke her ranks and rent
The Woodbine wreaths that bind her,
And down the middle, buzz! she went
With all her bees behind her.

Of all the poets who have sung the praises of the Birch, Coleridge, Keats, and, pre-eminently, Sir Walter Scott, none of them has surpassed the initial line of the first stanza in condensed and subtle expressiveness. Scott's is somewhat similar, although not quite so good:—

Where weeps the Birch with silver bark,
And long dishevelled hair.

"Dishevelled," implying disorder and entanglement, does not convey a correct idea of the foliage of the Birch. "Swang her fragrant hair," is decidedly better. The fulness and ripeness of the poet's knowledge of trees is amply illustrated in those passages of his poems relating to the Poplar. This is a tree with which he has been familiar from early childhood, as we gather from the "Ode to Memory," where he fondly recalls—

The seven Elms, the Poplars four,
That stand beside my father's door.

The famous Poplar is "Mariana," which Mr. Read has reproduced in his fine picture of the "Moated Grange," now at South Kensington.

ton, is a prominent object in a very striking poem. The locality, it is scarcely necessary to say, is in the fen country :—

About a stone-cast from the wall
A sluice with blacken'd waters slept,
And o'er it many, round and small,
The cluster'd marsh-Mosses crept.
Hard by a Poplar shook alway,
All silver-green with gauled bark;
For leagues no other tree did mark
The level waste, the rounding gray.

As an example of landscape painting in words there is nothing more perfect than this in modern literature. We are not aware if the doubt was ever suggested before, but we think it is at least questionable if Mr. Read is right in assuming the particular tree in the poem to be a Lombardy Poplar. "Silver-green," a remarkable epithet, is more applicable to the Abele or white Poplar than to the fastigate Lombardy species, and the sound of the trembling of the leaves is less noticeable in the latter than in most of the other Poplars. In other poems this rustling noise is described as "lispering," "hissing," and like the sound of "falling showers," phrases all tolerably approximating to exactness. In "In Memoriam" there is a special reference to this white Poplar, whose silver-green foliage shows much more white than green in a gale of wind :—

With blasts that blow the Poplar white,
And lash with storm the streaming pane.

The "quivering," "tremulous" Aspen is also mentioned, but Mr. Tennyson is too good a botanist to fall into the popular error of supposing that it is the only tree which has fluttering leaves. Except the Ontario species and one or two others, nearly all the Poplars have the same peculiarity, caused, it may not be superfluous to say, by the compression of the leaf-stalk. Very curious it is to notice in the upper branches, while a light wind is overhead, each particular leaf shaking on its own account, while the branch, of which it is a part, and the tree itself, are perfectly motionless. Of the Beech, the notices are scantier and less specific. Its peculiarly twisted roots, rich autumn tints, smooth bark, and unusual leafiness, are all described, however, more or less poetically. The following verse from "In Memoriam" has a certain pensive sweetness of its own :—

Unwatch'd, the garden bough shall sway,
The tender blossom flutter down,
Unloved that Beech will gather brown,
This Maple burn itself away.

The rich autumn tints of the foliage of the Maple here alluded to. Cedars, Cyresses, and Yews, all members of the great Coniferous family, are prominent objects in Mr. Tennyson's landscapes. In the eighteenth section of "Maud," beginning,

I have led her home, my love, my only friend,

and which contains some passages full of solemn tenderness and beauty, and a splendour of language worthy of Shakespeare himself, occurs the oft-quoted apostrophe addressed to the Cedar of Lebanon by Maud's somewhat distempered, though now happy, lover :—

O, art thou sighing for Lebanon
In the long breeze that streams to thy delicious East,
Sighing for Lebanon,
Dark Cedar. * * *

And over whom thy darkness must have spread
With such delight as theirs of old, thy great
Forefathers of the thornless garden, there
Shadowing the snow-limbed Eve from whom she came.
Here will I lie, while these long branches sway.

The Yew, though usually regarded as the emblem of death :—

Cheerless, unsocial plant, that loves to dwell
Midst skulls and coffins, epitaphs and tombs,

might, in its extreme tenacity and length of days, be a fitter representative of life and endurance. In the second chapter of "In Memoriam" the Yew is described in the most masterly manner. These are two of the verses :—

Old Yew, which graspest at the stones
That name the underlying dead,
Thy fibres net the dreamless head,
Thy roots are wrapt about the bones.

O not for thee the glow, the bloom,
Who changest not in any gale,
Nor branding summer suns avail
To touch thy thousand years of gloom.

The locality, the hue, the prolonged life, and the general unchangeableness of appearance, are all here summarily noticed. The Laureate

seems, however, to share the popular dislike to this tree, a feeling which Gilpin, in his "Forest Scenery," ridicules as weakness. In "Amphion," Yews are called "a dismal coterie;" in "Maud" a "black Yew gloomed the stagnant air;" and in "Love and Death," we have the portentous image of the Angel of Death walking all alone beneath a Yew. Our limits forbid more than a mere enumerative mention of other well-known trees, whose memory Mr. Tennyson has rendered sweeter to all future generations of tree lovers. "Immemorial Elms," "perky Larches and Pines," "Laburnums, dropping-wells of fire," Elders, Hollies, "the pillared dusk of sounding Sycamores," "dry-tongued Laurels," "slender Acacias"—all these and many others are to be found within the four corners of his poems. One only remains, the Oak—"sole king of forests all," and as Mr. Tennyson has celebrated the praises of the monarch of the woods at great length in the "Talking Oak," we shall add a few words on that charming composition by way of conclusion. As is well known, the poem takes the form of a colloquy between an ancient Oak, which formed a meeting-place for two lovers, and the young gentleman in the case. He comes to question the tree about his lady-love, who had visited the hallowed spot in his absence. And Landor himself, in his happiest vein, never conceived a more exquisite imaginary conversation. Here, in sportive phrase and bantering talk, is the whole philosophy of forest life set forth with a poetic felicity, saucy humour, and scientific precision of language, each admirable of its kind. The poem is literally a love idyll and botanic treatise combined, and never, surely, were love and science—January and May, might one say, so delightfully harmonized, conveying, too, to those who have eyes to see and hearts to understand, glimpses of a spiritual interpretation of nature, undreamt of by Pope and his school. Thus pleasantly does the old Oak of "Summer-Chace" discourse to Walter of Olivia's charms; and the reader will not fail to notice the skilful way in which the poet's practical acquaintance with trees is turned to account :—

I swear (and else may insects prick
Each leaf into a gall)
This girl, for whom your heart is sick,
Is three times worth them all;

and then, with a warmth of praise unusual and almost improper in such a venerable inhabitant of the forest, he continues :—

Her kisses were so close and kind,
That, trust me on my word,
Hard wood I am, and wrinkled rind,
But yet my sap was stirred :
And even into my inmost ring
A pleasure I discern'd,
Like those blind motions of the Spring,
That show the year is turn'd.

Farther on, the not ungrateful lover invokes all atmospheric and other good influences on his partner in the dialogue, who has proved so communicative a companion :

O rock upon thy towery top
All throats that gurgle sweet!
All starry culmination drop
Balm-dews to bathe thy feet!
* * * * *
Nor ever lightning char thy grain,
But, rolling as in sleep,
Low thunders bring the mellow rain,
That makes thee broad and deep!

These, it will be admitted, are very melodious strains. Seldom has the imagery of the woods been used with more appropriateness and effect than in this poem, and its poetic excellence is rivalled by its accuracy. No one but an accomplished practical botanist could have written it. And throughout the poem, light and airy in tone as it is, there is distinctly perceptible the scientific element,—the sense of the forces of nature acting according to law, which, as we have already said, pervades like a subtle essence much of Mr. Tennyson's poetry.—*St. Pauls'.*

Another Ventilator.—An apparatus has just been invented, says the *Architect*, by Captain Wintour, of Bristol, consisting of a metal frame with glass, at each end of a cylinder of gauze wire. The cylinder slides backwards and forwards in a metal shield, by means of which it can be easily fixed in any window, door, or, indeed, anywhere. The inventor claims for it that it is specially adapted for the windows of private houses, churches, hospitals, and all large buildings; it can also be fixed in carriages, cabins of ships, tents, conservatories and greenhouses. Its action is to admit air at the sides of the cylinder only, and remove foul air simultaneously and imperceptibly without draught or admission of dust or insects.

THE HOUSEHOLD.

CIDER MAKING.

WOULD you or any of correspondents favour your readers with a receipt for making cider?—J. A. B. [The following, according to Mr. Knight, is the practice of the best cider makers in Herefordshire:—As the fruit falls, it is collected in heaps of about 8 or 10 inches deep, or is conveyed to an open airy shed or Apple-loft. In collecting the Apples for making the best cider, the green fruit is thrown aside. In these heaps the Apples should remain some weeks, until they become quite mellow. When conveyed to the mill all the decayed fruit are picked out. The pulp is thoroughly broken down by the action of the mill, not only for the more perfect extraction of the juice afterwards by the press, but also for the free admission of the air to every part of it. With this view the grinding should not be hurried, but rather a slow operation; for the more the pulp is exposed to the action of the air, the more saccharine it becomes, and the cider will be the less liable to violent fermentation in the cask. The pulp is allowed to remain exposed to the air four-and-twenty hours before it is conveyed to the press, in order to obtain as large an absorption of air, as possible. In some instances the pulp is slightly pressed, again spread to the air for some time, and afterwards returned to the expressed juice and pressed again. With such or similar preparations as the above, the increased richness of the juice, the diminished energy of the ferment, and the low temperature of the season, are all favourable to that moderate degree of fermentation which is requisite for making sweet cider. When the liquor is put into the casks a considerable hullage or space between the bung and the surface of the liquor should be left, to allow a freer access of air, and the casks should be placed in an open and airy place, as in confined places or cellars the cider ferments too rapidly. If, notwithstanding this precaution, the fermentation becomes very active, the liquor should be immediately racked off, and the operation repeated if it again occurs. The too great activity is indicated by a loud hissing noise, which is heard upon applying the ear to the bung-hole. The fermentation sometimes commences in a day or two, and at others not for many days, or even a fortnight or three weeks, according to the strength of the juice and the temperature of the season. When the fermentation has ceased, which may be known by the liquor becoming clear, it should be immediately racked into well-scalded and dried casks; these casks, as before, should not be quite filled, and their bung-holes merely covered. Great attention should be given to prevent any recurrence of active fermentation; upon the least appearance of which racking must instantly be resorted to, until the cider becomes permanently tranquil. The dregs of the fermenting casks should be filtered through a conical flannel-bag, spread at the mouth and suspended by a hoop. In the operation of racking, the finer the stream the more effectual will it be in checking fermentation; and this effect will be increased by pouring the liquor through a vessel perforated with numerous holes, or affixing the rose of a watering-pot to the vent or tap, thus producing a more complete separation and exposure to the air, and consequent precipitation of the ferment. Some cider-makers cause the cider to run down a board into the receiving vessel so as to expose it as much as possible to the action of the air. The object of all this particular management of the cellar is after obtaining a certain degree of fermentation necessary to produce a sufficient quantity of spirit, to subdue the action of the exciter, the ferment, and thereby to induce that low and tranquil change which gradually converts the remaining sugar into spirit, but which, in a well-closed cask and a cool cellar, it takes years to accomplish. In the following April the cider is again racked, to get rid of the lees, and the casks are then closely bunged down, and the cider is in a fit state to stow away in the proper keeping place, or to send out. When perfectly fine the cider is fit for bottling; but Mr. Knight recommends keeping it two years before it is bottled. Cider, carefully managed, will retain its sweetness three or four years in the cask, and many years when bottled. The bottles should be laid upon their sides, in order that the corks may swell and prevent the escape of the gas. In bottle, the gas, which at first is yet slowly formed, soon occasions such a pressure as to put a stop to any further change, which can proceed only so long as the carbonic acid gas—one of the products of that change—is allowed to escape. In tolerably matured cider, the needful pressure for this effect is too feeble to endanger the bursting of the bottles, but is at the same time sufficient to give great briskness to the cider when the cork is drawn.]

Horseradish.—Horseradish grated and mixed with pickle will prevent mould forming on the tops of jars. Leaves of Horseradish laid over the top will answer the same purpose. It is said that this pungent root, if grated and mixed with cider and eaten with the food, will both prevent and cure paralysis.

CAROLINA ALLSPICE.

(CALYCANTHUS.)

Two or three species of *Calycanthus* are commonly met with in botanic gardens, and one of these—*C. occidentalis*—has flowered very profusely at Kew during the present summer. They have bright green foliage, and dull purplish-yellow or chocolate-coloured flowers, borne in the axils of the leaves. *C. floridus*, of which the accompanying is an illustration, is found in many parts of the United States, and is known by its wood and roots smelling strongly of camphor when cut or bruised. The flowers and foliage smell something like a perfectly ripe Quince, and it has several local names indicative of its odorous properties, that of sweet-scented shrub or Carolina Allspice being the most popular. These fragrant plants are represented in Japan by the *Chimonanthus fragrans*, with the odoriferous flowers of which most of us are acquainted. The whole order to which the *Calycanthus* belongs includes but six or seven species, nearly all of which are ornamental shrubs well adapted for planting against sunny walls, or in sheltered positions as shrubs on the lawn. The *Chimonanthus*, which, as has been said, belongs to this order, is peculiarly difficult to propagate by means of cuttings, no cultivator having as yet succeeded in rearing plants of it by that method. Cuttings root under favourable circum-



The Carolina Allspice.

stances, but from some unaccountable reason afterwards refuse to start into growth, and collapse, after lingering for some little time, in the cutting-pots. The late Prof. Lindley offered a guinea to any one who would bring him a plant with proof that it had been raised from a cutting, and we here allude to the circumstance in order to induce propagators to try the experiment. Grafting on portions of the root, or cuttings taken from a pot plant grown in a moderate heat indoors might produce better results. B.

A Paris Fruit-shop.—The following description of a fruit-shop in the Halles Centrales is given in M. Zola's recent work, "*Le Ventre de Paris*:"—"In the narrow shop the fruits were piled high. At the back, on shelves, there were rows of Melons, Cantaloups rough with many warts, *Maraichers* with patterns on their rhinds like grey guipure. In the windows the finer fruits, delicately dressed, nestled in baskets: above all, the *Montreuil Peaches* with fine clear reddening skins, and the southern kinds yellow and sunburnt. The *Apricots* seemed the colour of amber against the Moss. The *Cherries*, ranged one by one, were like so many laughing mouths—those from *Montmorency* fat, jovial lips; those from England larger and graver. The common *Black-hearts*, nearly always crushed, the *Red* and *White-hearts* smiled together, half joyously, half dismally. The *Apples* and *Pears* rose with architectural regularity from beds of Fern. There

were the pretty Lady Apples, the red and white Calvilles, the large Rambours, the blond and freckled Pippins, Reinettes, and green Apples; and near them the Pears—Butter Pears, Blanquets, Pears of Messire Jean, and the famous Duchesses, magnificent without, rather like balls of cotton within. Near at hand transparent Plums were exhibited—the Queen Claude Greengages, Prunes de Monsieur; Mirabelles like large golden beads contrasted with sweet-smelling Strawberries—wild, not garden-grown, for the latter always retain the odour of the watering-pot. Raspberries added their scent to this medley of perfumes. Tricolour ranges of Currants and tufts of Filberts lay in heaps; and above them were baskets of luscious heavy Grapes, burnt to a colour of rust by southern suns."

PROTECTING MATERIALS.

How to counteract the effect of frost on tender plants is a matter which now requires consideration. Frames, pits, and glass houses of all kinds should at once be put in good repair. A store of dried Fern should be at hand, and placed under cover or built into a stack for use when wanted, covered with tarpaulin or thatch to keep it dry. Such protections are suitable for frames, or as an extra covering over mats or other thin protecting material in the case of severe weather. The strawy part of litter, dried in the sun, and stored loosely may also be used for the same purpose. The haulm of Beans and Peas, too, makes excellent protecting material, and can be advantageously strewed over somewhat tender dwarf plants, shrubs, young Conifers, &c., in case of hard frost, and removed when it abates. The stalks of Asparagus also make a good covering for seed-beds, dwarf plants, frames, &c., and, like all other materials of a similar kind, to be very effectual, they must be used as dry as possible; when cut they should be placed erect, but thinly, against a fence or support of some sort, and turned a few times until they have become thoroughly dry; they will then be found to be very light, and should be stored in an erect position in some airy shed or under covering. Heather affords good protection, and in some places it is both plentiful and easily obtained. It forms an excellent thatch for permanent covers, which are very useful for placing over cold frames; Calceolarias in frames, indeed, having sliding covers and thatched with Heather or straw, seldom need any other protection in winter. Broom, too, is one of the best and most effectual protecting materials we have, especially in the case of trees on walls, Roses, &c.; it can be used thinly and just as it is cut, it does not harbour mice, it permits a freer circulation of air to take place about the plants than most other protecting materials, and it has always a neat and tidy appearance. After being used during winter it is useful stuck in as a shelter amongst seedlings in spring, and also amongst newly transplanted plants. The best of the stalks will last two years, and what are not available at the end of that time make excellent material with which to light fires. Furze or Gorse is sometimes used for protecting outdoor plants, but owing to its unkindly character as regards handling, it cannot be employed with advantage for ordinary purposes, although it is useful occasionally in the case of Alpines and outdoor herbaceous plants. A piece or two of it stuck into the ground, so as to cover them over, forms a good protection for them, and in this way they may sometimes be wintered with comparative safety. Rushes and rank Grass cut from the sides of water-courses in summer or autumn, and dried and stored, also answer for coverings. There is one great objection, however, to the use of Grass or hay in this way, and that is the quantity of seeds which they contain, and which are sure to be distributed wherever they are employed. Tree leaves are much used for protecting roots of plants from frost; but, unless they are strewn over with some soil or rough litter, they get blown about in all directions, and thus give the ground a littery appearance. In protecting Parsley, Onions, seedling Rhododendrons, and other little plants required to grow and to be exposed, but not frozen, during winter, the protecting material employed should not rest upon them; such plants should, therefore, be planted closely together. Erect a light frame-work or screen over them, so that some Pea-stakes can be laid thinly over the frame-work, and this may remain untouched throughout the winter without proving in any way injurious to the plants. In severe weather, some of the above-mentioned substances should be strewed over the stakes at night and removed in the morning, and their use should be discontinued when fine weather again sets in. With mats as protectors every one is acquainted, and of them there should always be a good stock. Evergreen boughs, Spruce branches, and the like, are also too well known to require remark, further than to say that, when placed over or in front of outdoor plants in winter; the plants, if covered up in dry weather, generally escape uninjured, and that, when laid over litter, leaves, &c., they prevent them from being scattered about by wind. Cheese-cloths and canvas keep out spring frosts; but they soon get rotten and useless if employed for winter work, and oilcloth and

tarpaulin are better adapted for excluding heavy rains than frost. Wooden shutters are good appliances for keeping out either frost or rain, especially in the case of frames where no fire-heat or other artificial warmth can be had. Frost seizes on damp materials more than on dry ones; therefore, whatever is used for protecting plants ought to be as dry as possible. If mats are used at night, when removed in the morning they should be laid across a rail, or a fence, or a wall to dry, or they should be spread out in some way so as to effect that end. When quite dry, they should be rolled up and placed under cover until they are again required for use. If haulm, straw, or any similar substance be employed, shake it out before the sun in the morning if the day be fine, and then place it under a shed or wooden shutter to keep it dry till it is used again. Never permit strawy stuffs to remain long in a heap, especially if they are damp, as fermentation will certainly ensue, and their efficiency will be thereby greatly impaired. Never permit such coverings to remain too long over either plants or frames; on the contrary, remove them early every fine day, and in this way try to get the subjects that have been covered up well aired and dried. Unremitting attention to this secures hardy plants, which do not start prematurely in spring and thus have their young growths injured by late spring frosts. If snow falls thickly and settles upon the covering, permit it to stay there as long as the weather remains decidedly frosty; but immediately a thaw comes, have the snow carefully removed, for, if allowed to remain, it melts, the cold water finds its way through the covering to the plants, and injures them. If the snow continues for more than a few days, however, remove it, and, if necessary, increase the covering. Snow is a good protector of such herbaceous plants as are in the ground; but fluctuations of frost, snow, thaw, and sunshine, succeeded by frost again, sometimes kill them. In placing litter or leaves around the roots of Roses and Clematises, some of the more tender evergreens, be careful that no part of the stem is covered; covering the soil about an inch or two away from the neck of the plant is all that is necessary. Over Cannas, Dahlias, and a few other tender plants, the roots of which will remain in the ground all winter, spread a layer of leaves (not too dry), and cover them with the stalks of the plants. Amateurs having plants in frames, and no means of giving them artificial heat, should place a wall of about six or eight inches thick of soil around the frames, and cover the sashes in frosty weather with straw mats or some such protecting material. Pits, with turf walls, which support a framework of wood and sashes, form excellent wintering places for common plants, which should be kept dry, unless it be Cinerarias, Calceolarias, Cyclamens, or Primulas, because, when dry, the temperature may fall to the freezing point without injury to them. Pelargoniums, under ordinary circumstances, may be kept dry for two months in winter, and yet live and be healthy; and a plant thus wintered would remain unharmed even when the thermometer might stand at the freezing point, while plants that are well watered would be killed in a temperature even a degree or two higher.

W. FALCONER.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Melons.—Unless these are ripened during the present month or the first half of the next one, they cannot be expected with much certainty. Therefore maintain a night temperature of at least 70°, and allow an advance of 15° by day with sun-heat. When they begin to ripen, keep the house rather dry; but still retain a brisk heat. Ripe Melons at this season may be cut, and kept on a shelf in the fruit-room for some time without deteriorating.

Cucumbers.—The earliest winter plants should now be bearing, and the others should be well established. Good turfy loam, mixed with leaf-soil, or some thoroughly decayed manure, but withal, not too rich, suits them well, and around the necks of the plants the soil should rise in little mounds. Keep the soil moderately moist, but avoid over-watering, and only syringe the plants in fine weather. Maintain a high temperature, 70° or 75°, with an additional 10° at mid-day, and permit the plants to make good growth. Do not allow them to set more fruits than they can well carry, and, until they are strong enough for fruiting, pinch all off. With dustings of flowers of sulphur on the affected parts, counteract mildew, and, if the stock of plants be deficient, increase it from cuttings, not from seed.

Strawberries.—By this time these should be thoroughly established plants, with plump and hard crowns, and well seasoned leaves. The pots also should be quite full of roots, as cold and heavy rains are injurious to them; the first to be started, and also the weakest plants, ought to be placed in cold frames on sifted coal ashes, and near the glass. The main supply may be arranged

in the side of a ridge, formed of ashes, so that they will be freed from heavy rains, and kept in better condition for forcing.

The Flower Garden.—Frost has come, and it has nipped the most tender plants, therefore all expedition must be used in taking in those that are to be housed, and to cut down and clear away, or otherwise render tidy those that are not required. The stock of Coleuses, Heliotropes, Alternantheras, and other tender plants should consist chiefly of cuttings propagated in August, and are, therefore, safe. The finer kinds of Pelargoniums should be lifted first, and the commoner kinds afterwards, trimming them and placing them under cover at once. Such Pelargoniums, Calceolarias, Verbenas, &c., as are in sheltered places, and are not required for taking in, may be cleaned a little and left where they are. Leave Cannas till the last, when their stalks may be cut over, the roots lifted and stored in a shed, or left in the ground, according to conveniences; but if the latter measure be adopted they must receive a mulching of leaves or litter. Sift and take into the fruit-room, cellar, or elsewhere, Dahlia roots and Gladioli. Place the roots of Caladium esculentum underneath a stage in a greenhouse, and cover them over with dry cocoanut fibre, there to remain till spring, when they will be started in heat. Lift and pot plants of Abutilon Thomsonii, Plumbago capensis, Cassias, Fuchsias, Ficuses, Acacias, and other plants that were used in bedding, and also bring indoors, at once, all plants in pots which have been plunged or placed out of doors during the summer. Root out Wigandias, Ferdinandas, Solanums, and other large-leaved sub-tropical plants, as when smitten by frost they only present a wretched appearance. Any succulents, about the hardness of which there is a doubt, should be lifted and planted in a cold frame, but such kinds as *Sempervivum montanum*, *elegans*, and *Californicum*, being quite hardy, may be left out all the winter. The common *Echeverias* will stand with impunity a few degrees of frost, and the pretty yellow variegated-leaved *Mesembryanthemum cordifolium* is almost hardy; indeed, the green-leaved sort survives an ordinary winter uninjured. *Geranium anemonæfolium* and most of the white-leaved *Centaureas* will also bear uninjured some degrees of frost. Get everything in the flower-garden in good trim as speedily as possible; and, if the beds be empty, they will look better than if partially occupied by decaying plants. Should the beds have to be filled with spring-flowering plants, the sooner it is done the better, the stronger will the plants become, and the earlier will they flower. Plant at once such bulbous-rooted plants as Snowdrops, Crocuses, Grape and other Hyacinths, Narcissi, Dog's-tooth Violets, Crown Imperials, Scillas, Bulbocodiums, and other spring-flowering species and varieties. Cut over the stalks of Hollyhocks and herbaceous plants in general, and lift and divide a few of the very early-flowering kinds; but leave the late-blooming ones untouched until they begin to grow in spring, which is the best time for moving them. Lift Carnation and Picotee layers, if desirable, and pot them, or plant them thickly in frames having a hard bottom covered with half a foot of light soil mixed with leaf-mould. In damp localities, pot a few of the various sorts of Pansies, and keep them in frames, as they are sometimes apt to damp off in such situations.

The Kitchen Garden.—Winter is approaching, and for it we must be prepared with plenty of dry and rank litter—Pea and Bean haulm, Asparagus stakes, evergreen boughs, mats and hurdles, frames, &c. In fact, we must keep the frost from Rhubarb and Seakale that we intend to force or start early, and that we can do by placing some litter over their roots. Celery, Leeks, and the root-crop, such as Carrots, Beet, and more especially Parsnips and Jerusalem Artichokes, must not become frost-bound for want of timely attention in applying some litter, which, also, not only keeps the soil open, but saves a great deal of trouble and time in lifting. It is worse than useless, however, to apply it when there is no necessity for it. Choose a dry day to lift some Carrots, Beet, Salsafy, and Scorzonera, and store them in a dry shed in sand. Earth up Celery and Cardoons as they require it, and remove the old fruiting stems of Globe Artichokes, as well as some of the weakest of the shoots. Continue to plant out Cabbages for use in May and June, and, if planted thickly, the thinnings may be pulled early for Coleworts. As soon as severe weather comes, transfer young Cauliflower plants from the open air to frames; but, so long as the weather continues mild, they are better outside. The almost certain result of nursing Cauliflower plants in winter is "buttoning" in spring. Damp, however, is their greatest enemy, and must be counteracted by means of dustings of wood ashes, and dry sand and earth. Break a leaf or two over the crowns of such Cauliflowers as are turning in, to protect the "curd" from rain and frost. Sow Lettuces in frames; transplant some of the hardy varieties, and lift a few half-grown ones, and plant them in frames. Continue to transplant Endive in dry banks and sunny ridges, and tie up those sufficiently advanced for blanching purposes. Lift also a few of the half-grown ones, and plant

them in frames, to come into use in winter, and be more conveniently blanched. Stir the soil amongst young Spinach; weed Onions, and have some hurdles placed over late French Beans; the hurdles will come in useful afterwards for protecting Parsley. Clear away Tomatoes, Vegetable Marrows, French Beans, Scarlet Runners (if killed), Peas, &c., and do not let any exhausted vegetables encumber the ground a day longer than they should. Have all empty ground manured, trenched, and ridged, to be ameliorated by the influence of the winter, and in readiness for spring crops. Do not forget, however, that if the ground has been well manured for the previous crop, it should only be deeply worked without receiving any manure now, if intended for Carrots, Beet, or Parsnips next year. If the ground be poor, it must, however, be manured, but, in that case, keep the dung at the bottom of the trenches, otherwise the roots will become forked.

MR. COWAN'S LIME-HEATING.

THAT Mr. Cowan committed a grave mistake in inviting an inspection of the Hatfield arrangement before it was fully developed, all must admit; for, with some thousands of feet of piping fully exposed to the free air of heaven, the fixings in some respects temporary, and with the kiln and its surroundings still absorbing heat, how is it possible that the trial could be a complete success? Everyone, who has had any experience in the matter, knows that a hot-water apparatus, large or small, rarely acts perfectly on the first application of the fire. Portions of air lurk here and there in the pipes for days, and sometimes weeks; and, until every particle is discharged, there cannot be perfect circulation of the water. Hence, I consider there is every excuse for what may be called want of rapid circulation. The surface of piping is large; the boiler, I think, not up to its work—that is, not sufficiently large; and the chalk fresh from the pit, wet, and not in good burning condition. Under such circumstances, I think Mr. Cowan is fairly entitled to ask that judgment should be suspended pending the completion of the work and a fair trial.

I could not get to Hatfield for the general inspection, but an examination on Saturday last—October 11th—under the guidance of Mr. Bennett, combined with my experience of the system at the Manchester meeting, satisfies me that there is profit in the scheme so soon as the proper working of it is understood. At Hatfield, Mr. Bennett assured me the yield of lime, viz., thirty-five bushels, up to the time of my visit, which sold at 6d. per bushel, was more than equal to the cost of coal-fuel consumed, so that the system was really a compensating one. But, it will be said, where was the heat? Well, just where I have indicated, absorbed by the earth and masonry of the fixings, and what got into the piping was immediately cast to the winds. That I am satisfied with the system cannot be better indicated than by the fact that I am preparing to adopt it for three of the clients of the firm to which I belong in the Midlands, as well as in Bucks and Devonshire; but in each case I shall so arrange the boilers that fire-bars for coal can be introduced should coal heating at any time become necessary. In this way I hope to allay some doubts—doubts which must necessarily surround the system until it is thoroughly established in the hands of neutral parties.

WILLIAM P. AYRES.

Imperishable Hothouse Works, Brockley, New Cross.

COVENT GARDEN MARKET.

OCTOBER 17TH.

Or fruit there is a large supply, for which there is an increasing demand. English-grown Pears consist chiefly of Marie Louise, Gansel's Bergamot, Louise Bonne, Crassane, and a few others. From Jersey come very fine examples of Duchesse d'Angoulême and Beurré Clairgeau. Grapes are plentiful and good. Pines are furnished in moderate quantities. Melons, Figs, and Peaches are almost over; and Walnuts, though abundant, are dear. There is also a good supply of Bananas, Water Melons, and Spanish Onions, the last being large and fine. Vegetables of excellent quality are abundant.

Prices of Fruits.—Apples, per half-sieve, 9d. to 1s.; ('hilies, per 100, 2s.; Cobs, per lb., 1s. to 1s. 6d.; Filberts, per lb., 1s. to 1s. 6d.; Grapes, hot-house, black, per lb., 1s. to 6s.; Muscats, 2s. to 6s.; Lemons, per 100, 8s. to 14s.; Melons, each, 2s. to 4s.; Oranges, per 100, 12s. to 24s.; Peaches, per doz., 6s. to 12s.; Pears, per doz., 1s. to 4s.; Pine-Apples, per lb., 3s. to 6s.; Tomatoes, per doz., 1s. to 2s.; Walnuts, per bushel, 8s. to 12s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 1s. 6d. to 3s.; Beans, Kidney, per half sieve, 1s. 6d. to 2s.; Beet, Red, per doz., 1s. to 2s.; Brussels Sprouts, per half-sieve, 2s. 6d.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 3s.; Cucumbers, each, 3d. to 6d.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 3d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 2s. 6d. to 4s.; button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Potatoes, per bushel, 2s. 6d. to 4s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Salsafy, per bundle, 1s. to 1s. 6d.; Scorzonera, per bundle, 1s.; Spinach, per bushel, 3s.; Turnips, per bunch, 3d. to 6d.; Vegetable Marrows, per doz., 1s. to 2s.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

WHERE TO PLANT FRUIT TREES.

A PLENTIFUL supply of good fruit is one of our greatest national wants. Hitherto the finer kinds have been almost exclusively reserved for the higher classes. Our object is to bring good fruit within reach of all—to make that which has hitherto been a luxury to the rich a common every-day necessity of the poor. But how is this to be done? Chiefly and simply by filling up our vacant spaces with fruit trees. Every unoccupied space is a sheer wilful waste of food, and of all the strength and gladness that come of the consumption of the lighter and more pleasing forms of it. Then how cheap such pleasures might become! Maiden trees of most of the choicest varieties of fruit can be purchased at from 9d. to 1s. 6d a piece, and they need little from us save a yard of earth and a little skill and care. Beyond this, almost all the processes of production are done for us free of cost. The sun quickens and transforms, the dews refresh, the air nourishes, the rains feed the luscious fruits, and we gather them. They come to us almost as cheaply as the fish out of the sea. We trust our readers will instantly look about for vacant spaces, and set about filling them with choice fruit trees; and first let them look to their walls, and especially to the tops and bottoms of them. Wherever there are two feet of bare brick at their base that will hold a cordon Plum, Peach, Apricot, or Apple, plant there at once, and then look up to the top of the wall. It is but seldom that vacancies cannot be found there. The best mode of furnishing such vacancies is with choice rider-cordon Pears—that is Pear trees with simple stems, reaching to within a foot or so of the coping of the wall, and then trained right and left, either as single, double, or multiple cordons—that is, several branches one above the other—according to the available area. It is astonishing what heavy crops of Pears may be harvested from such trees, crowning the heads of Peaches, Nectarines, or Apricots. The next vacant spaces in gardens are often found in front of walls, or by the sides of the primary or secondary walks (alleys, as they are called). In all such positions ground cordons can be run along as secondary edgings, on a single wire, within 9 inches or a foot of the ground. These are highly ornamental, and yield fruit of the highest quality. Of course it is presumed that the walls proper are all well furnished with trees, the espaliers well covered, and the conical trees within 6, 8, or 10 feet of each other, according to their size, lining and embellishing the main walks, and that there are no vacant spaces or unhealthy trees among them. If there are, now is the time to uproot worthless trees or to fill up such blanks. Again, if pyramids are grown in 5-foot or 6-foot borders, a row of ground cordons may be run down on each side of the conical trees, thus forming lines of beauty throughout the summer, and very welcome contributors to our fruit-basket at gathering time. Outside the garden proper there is almost sure to be a slip, as it is called; no matter how large the garden, an outer piece of ground is always wanted to grow Potatoes. Here we often have a succession of fences of wood, iron, brick, concrete, earth, or deep ditches. Very often these are left wholly unfurnished, or but very partially covered. The whole of these should be thoroughly furnished with fruit trees at once. There can be no difficulty in covering any kind of fence, high or low, close or open. Rabbit-proof wire fences form admirable supports for low espalier Apple, Pear, or Plum trees. The outside, again, may be furnished with Currants and Gooseberries. The wood and buds of these can be made nauseous to ground game and proof against birds by an annual sprinkling, through a coarse rosed watering-pot, of a thin mixture composed of the roughly-made paint usual in such cases, with tobacco-water as a diluent in lieu of oil. As for Apples, Pears, and Plums, if planted on the garden side of such fences, the ground game unless extremely plentiful, will seldom molest them. If they do, a dressing with the same mixture will make them turn up their noses and seek sweeter food elsewhere than the dressed bark yields. Should the hares try an Apple or two in

the season, they will hardly be missed from the full crops gathered from such boundary lines. Ditches are less manageable spaces to grow fruit in, or over, rather; but it can be done thus:—Plant on the brow of the ditch on the garden side, place a few iron fence uprights at an angle of 45° or so over the ditch; then run along three, four, or six wires, according to the width of the ditch, and the number of branches required to cover it, and gather your finest fruit off the ditch space. The vapour arising from water seems to favour the swelling of the fruit; while, if the outer bank is higher than the inner or garden side, as it generally is, and it is kept clear of weeds, the heat is reflected back, to the great benefit of the fruit. Some of the finest Apples we have ever seen were gathered off a ditch space thus furnished with fruit trees. Having thus furnished every available space within and without the garden, we proceeded to walk around the estate in search of other suitable places for fruit tree culture. Let us look round the offices and stables first. In suburban residences the dwelling-house itself may have its walls covered with fruit-bearing trees. In the country this rage for utility, looking in upon us at our drawing room windows, would be called excessive; but almost every country residence has a sort of little village of secondary buildings around, behind, or tacked on to it. Architectural blunders most of these outtakings are, suggesting the idea of a want of forethought in the architect. But whatever may be said of the offices artistically, the cultivator with a keen eye to utility would beautify and extract a full revenue of profit from them, by making them carry and ripen large harvests of Cherries, Plums, Peaches, Apricots, Pears, and Apples. From the offices we look round the stables—architectural front, clock tower, lofty archway, all built of large blocks of polished granite or smooth freestone. It would be a shame to hide this beauty with fruit-trees. Quite so; but what about the inside of the yard, the sides and the back of the stables, all plain bare walls, pleading in their bleak baldness for a covering of trees? Some of the finest Pears I ever gathered were grown on the walls of stables. The heat of the horses is mostly an antidote to frosts, and there is no site I would choose so readily for a choice Peach, Nectarine, or Apricot tree as the southern or western side or gable end of a stable. From the stables let us walk to the farm. Hitherto we have seen space lost in patches; in most farmyards we see the best possible spaces for the culture of fruit trees squandered by the acre. Bare walls almost by the mile are met with, while the farmers or bailiffs are growing a few pecks of scrubby, sour worthless fruit in an unkempt garden or some poor dreary Moss-shrouded orchard. With a little management every outside and almost every yard wall might be covered with the choicest fruit, while roofs of all kinds but thatch might also be impressed into the service of fruit production. In the latter case, however, the trees must not lie upon the roof; tiles and slates, and even wood, become so hot if fully exposed to the sun as to parboil the branches and scorch the leaves that rest upon them. But all this heat may be diverted into fruitful channels by simply raising the trees on a slight framework of wood or iron from 6 to 9 inches or a foot above the roof. Thus these long roofs, so offensive to the eye and suggestive of ugliness, would be fringed with beauty and covered with the most luscious fruit. We thus see that space for planting fruit trees everywhere abounds on the walls of cottages, on every part of estates, and in every village on the backs, fronts, and ends of back-house, pig-stye, wood-lodge, coal-house, and ash-pit. No wall is too low to grow a cordon, none too high for Apricots, Pears, Peaches, or Vines to climb to the top of it. And when all architectural vacant spaces are filled, there are ground spaces innumerable on most estates that might be profitably and ornamentally furnished with fruit trees, as in pleasure grounds, near the front of belts of plantation, in warm sheltered places, in woods, and singly or as clumps in parks. What more beautiful in leaf, flower, and fruit than many of our Apples, Pears, Cherries, and Plums? Rivaling the Thorns in the profusion and glory of their flowering leaves, and exceeding all other trees in the beauty of their fruits, they deserve the first rank among ornamental trees for their artistic effect in landscape scenery. Thus art and utility unite to urge the filling of every vacant space with fruit-bearing trees.

NOTES OF THE WEEK.

— *YUCCA ELLACOMBEANA*, a somewhat scarce variety, is now flowering freely in Messrs. Osborn & Son's Nursery at Fulham. It is quite distinct from any other variety, its petals being shaded with bright copper colour, approaching crimson. In habit it resembles *Y. recurvata*, but its leaves are slightly undulated or wavy, and more rigid than those of that species.

— At the Grange, in Hampshire, both the red and yellow October fruiting Raspberries are now producing quite as heavy a crop as we have ever seen Raspberries produce in summer. The sub-soil is chalk and the surface-soil a light yellow pebbly loam. Where a variety of fruits is wanted for dessert in autumn and early winter, these Raspberries will be found most useful; they last as long as the frost can be kept off them by means of canvas supported on sticks.

— AMONGST the many fine Orchids lately introduced to our collections few exceed in chaste beauty that of *Cattleya exoniensis*, a hybrid raised in this country by Mr. Dominy; of this we saw a magnificent specimen in the Meadow Bank collection a short time back, bearing sixty-three fully expanded flowers, large and richly coloured.

— A NEW grove of "Big Trees," for which California is famous, has been found on the Coulterville route to the Yosemite Valley. The new grove has been named the Merced Grove of Big Trees. It is said to be fully equal to either the Calaveras or Mariposa Groves, and is easy of access, being on a direct line to the Valley. One of the trees is said to be 75 feet in circumference.

— WE received the other day, from Mr. Hill, some specimens of Keele Hall Beurré or Styrian Pear, which, for size and fine colour, were matchless, and when eaten they proved to be as good as they looked, a result not always realised. The skin of this variety, when in perfection, is pale yellow, the exposed side being bright red as if painted with vermilion, and the flesh melting and rich. It is, as Mr. Hill in another column says, one of our very best October Pears.

— ALL about to commence the culture of cool Orchids should by no means overlook the claims which *Odontoglossum grande* has upon their attention. One of the grandest displays of this superb autumn flower we ever saw was to be seen a few days ago at Meadow Bank, where the plants are in vigorous health, and are bearing a profusion of splendid blooms, several hundred being in full beauty at one time. We should advise all who require indoor autumn flowers to grow this largely.

— THE beautiful new *Odontoglossum Roezli* is in flower in Mr. Bull's Nursery in the King's Road. It has two flowers on a spike, and it is probable, as has already been suggested, that when thoroughly established it will yet bear several flowers on a spike. A second plant of the same species has a flower on it fully half as large again as that which was on the plant which received a first-class certificate at South Kensington.

— MR. BARNES, late of Bicton, writes to us as follows:—"I am not now able to show you large Pine Apples, big Gooseberries, and Mangolds, but if you come this way I can show you my friend Mr. Burrage's garden, close to the sea here at Exmouth, in which you will find Lilacs now in full bloom, both the common Lilac (white and purple) and also the Persian kind, in proof of which I enclose you a handful just gathered, the perfume of which will remind you of spring." The sprigs sent were certainly deliciously fragrant, the white ones reminding us of those forced so abundantly about Paris early in the year.

— MR. TAYLOR, Covent Garden Market, has just received from Mr. Leighton, of Norfolk, Virginia, some of the finest Duchesse d'Angoulême Pears we have ever seen. They are similar to those exhibited by Mr. Leighton at the American Pomological Society's meeting at Boston on the 10th ult, and for which the Wilder medal was awarded. Owing to loose packing, most of them had got sadly bruised; but such as were in perfection were quite equal, both as to size and flavour, to the same kind of Pears imported from France. They weighed from 16 oz. to 21 oz. each, and measured 14½ inches in circumference. A similar consignment has, we understand, been sent to the Queen. The flavour of the unbruised parts was very good. It is probable that many parts of Virginia are as favourable for the culture of hardy fruits as California is.

— WE have received from Mr. Simpson, of Wortley, near Sheffield, the following note in reference to the growth of Muscat Grapes in a low night temperature:—"Herewith (he says) I send you a sample of ripe Muscats from Vines which were treated to a minimum night temperature, nearly 20° lower than that deemed essential for Muscats and other Vines up till the stoning period. I think you will admit that, for regularity and finish, they leave little to be desired. The Vines were started fairly at the beginning of March, and the Grapes are now, October 20th, dead ripe. Your readers can, therefore, judge whether a high night temperature has any forward influence, or is indeed of any advantage to Grapes at all.—To

this we have only to add, in corroboration of Mr. Simpson's statement, that the Grapes sent to us were of the finest flavour, very firm in flesh, thickly set, and well-coloured.

— A PLANT of *Nepenthes Chelsoni*, a new hybrid kind, is producing very fine pitchers at Messrs. Veitch's Nursery at Chelsea. It is intermediate between *N. Rafflesiana* and *N. Hookeri*, and is worth general culture as one of the finest in the group to which it belongs.

— THE Paris School of Mines receives and analyses, without charge, mineral specimens of all kinds, from soils to metal works of art. In five years, from 1868 to 1872, the number of such analyses was 2,916, or an average of 583 each year.

— AN article in this month's number of the *Edinburgh Review* contains an interesting historical and descriptive account of the Royal Gardens, Kew, founded, for the most part, on Mr. Oliver's *Guide Book*, now in its twenty-seventh edition.

— A REMARKABLY fine plant of the beautiful *Cattleya Dominiana* is now flowering in the Royal Exotic Nursery at Chelsea. It has been grown by Mr. Eason, gardener to General Studd, of Oxtun, near Exeter, and is a perfect example of good cultivation. Altogether it bears twenty-seven of its large soft rosy-coloured flowers.

— UNUSUALLY fine blooms of Neapolitan Violets, grown as described last week (see p. 322) have been sent to us by Mr. Groom, the gardener, Henham Hall, near Wangford. They were large, well coloured, and deliciously fragrant; finer Violets than they were, in short, could not possibly be desired.

— MESSRS. BACKHOUSE & SON, we understand, have just received at the York Nurseries some fine plants of rare Alpines from Labrador. Among them are *Parnassia Kotzebuei*, *Dryas tenella*, *Cassiope hypnoides*, *Rhododendron lapponicum*, *Diapensia lapponica*, and many others, all of which we hope they may be able to establish with the same success which has attended their culture of some of the more difficult Alpine plants.

— A CIRCULAR informs us that, in reference to the retirement of Mr. James Richards from the post of Assistant-Secretary to the Royal Horticultural Society, his friends desire "to express the high esteem in which he has ever been held by them while in that capacity, by presenting him with a testimonial, which it is proposed to hand over principally in money." The Committee appointed to carry out the matter, which consists of the names of many of our leading nurserymen, gardeners, and amateurs, headed by that of his Grace the Duke of Buccleuch as Chairman, seems already to have received considerable support in the way of subscriptions.

— MR. WM. SMYTHE writes to us, from the Gardens, Elmham Hall, East Dereham, to the effect that a Scotchman has been lately calling upon the gardeners of Norfolk and Suffolk, offering for sale a very inferior kind of cloth which, as our correspondent says, the trade call "shoddy." He introduces himself as Mr. Carmichael's nephew, and, as an inducement to buy his cloth, states that he has a quantity of garden netting at a low price "coming on in his cart." This bait, together with well-known names which he uses, often throws people off their guard and induces them to buy his cloth, but the cart never "comes on" with the netting.

— FROM the report of a Sanitary Committee, read at a meeting held in the City on Tuesday, it seems that the quantity of tea imported into this country in 1872 amounted to 183,000,000 lbs., of which about 38,000,000 lbs. was for exportation, and that in July last there was in bonded warehouses about 10,000,000 lbs. so grossly adulterated as to be unfit for human food. The adulteration of tea, it was stated, is effected in China, and as much as 70 per cent. of a material not tea at all has been known to be mixed with certain descriptions of tea and subsequently used for admixture with other teas of a better kind. The committee were of opinion that there can be no effectual means adopted to put a stop to these dishonest proceedings without the assistance of the Legislature.

— A DELIGHTFUL little bit of economy has lately been achieved in Greenwich Park. Some years ago a certain amount of trouble and outlay was incurred in placing at the foot of the most interesting trees and shrubs in the park iron tablets, on which were inscribed the name, age, &c., of each. Whether the public derived much instruction therefrom or not, it was evident to every frequenter of the park that this simple arrangement imparted much additional interest to the trees in the eyes of thousands of visitors, many of whom find their sole recreation ground in the park. Having been permitted to remain more or less completely illegible for several years, the tablets were taken up about twelve months ago on the plea of being re-painted. It was then discovered that the cost of re-painting could not be allowed; accordingly they have not been, and, it is understood, will not be replaced. Rumour even states that pecuniary results have been still further consulted by selling them for "old iron." If, therefore, we are "pound foolish," who can say we are not "penny wise?"

THE FRUIT GARDEN.

POT VINES FOR TABLE DECORATION.

MINIATURE fruit trees in small pots are very useful for dinner-table decoration, as well as for supplying the dessert, and their culture is not much more difficult than that of ordinary decorative flowering plants so often used for ornament only. The fruits most suitable for this purpose are Vines, Peaches, and Oranges, all of which are specially ornamental and interesting when laden with their delicately-tinted luscious fruit and fresh green foliage. The two last-named fruits may be kept dwarf and symmetrical by means of judicious pinching during summer, but the Vine requires a course of treatment peculiar to itself in order to cultivate it for table uses with success. The treatment until the fruiting canes are ready for forcing is the same as that for ordinary pot-Vines, but, when the canes are removed indoors ready for starting—say in October—earlier or later according to the time at which the crop is required, the cane is drawn through the bottom of a 32 or 24-sized pot, the former being in general quite large enough, while one even smaller may be used for weak canes. This top pot is made to rest on the surface of the larger one, and is itself filled with good loam and rotten



How table Vines are grown at Burghley.

manure, into which the Vine emits roots. The Vine itself is trained close under the glass in the ordinary way until after the fruit is set, when it is neatly twisted round an iron ring or other slight support, as shown in the accompanying illustration. When the fruit is ripe, and the plants are required for the table, the stem is severed below the small pot, and the roots by this time made in the small one are sufficient to prevent the foliage from flagging on its removal to the dining-room. Before being placed on the table, it should receive a good soaking of water, and should then be placed in an ornamental vase, and the surface of the compost should be covered with Ferns, Mosses, or Selaginellas, so as to conceal the pot and add to the attractive appearance of the plant. When at Burghley a year ago, we saw some fine specimens which had been treated in this way, the kinds used being Black Hamburgh and Royal Muscadine. Mr. Gilbert is very fond of Trebbiano for this purpose, owing to its being large and effective, and of good flavour when forced early and thoroughly ripened under a hot sun. Strong canes of Black Hamburgh may be allowed to carry six or seven bunches of fruit; Royal Muscadine from six to nine bunches, according to strength; and Trebbiano three or four, according to size. In order to obtain fine fruit, the Vines, while swelling off their berries, should receive repeated doses of liquid-

manure, and should be mulched and top-dressed occasionally with half-rotten stable-manure and good fibrous loam. When the fruit begins to colour, plenty of air should be given, and the temperature should be kept up; under such conditions Grapes will neither be deficient in colour nor bloom.

F. W. B.

A SELECT LIST OF DESSERT AND KITCHEN APPLES FROM AUGUST TO MARCH.

As the season for planting has now arrived, I have given a small list of Apples, all of which are well known to be good bearers, and of first-class quality. Those who intend planting, or filling up vacancies, will find it more profitable to do so during this or next month, as it would give the trees a chance of making fresh roots before the frost sets in; and not only that, but afford a probability of getting a few fruits in 1874. I have arranged them in accordance with their periods of ripening.—ALFRED STACEY, *Merriott Nurseries, Crewkerne.*

Dessert.

Borovitsky (second size).—August. Roundish oval and angular; skin, smooth to the touch, greenish yellow, marked with beautiful scarlet stripes, and covered with a fine rosy-violet bloom; flesh, white, firm, rich, and sugary, very juicy.

Annat Scarlet (second size).—September and October. Roundish oblate; skin, yellowish green, striped and mottled with red in the shade, but almost covered with bright scarlet, especially on the sunny side; flesh, whitish yellow, with a very delicious rich juice.

Kerry Pippin (third size).—September to November. Roundish oval; skin, smooth, shining greenish yellow, but changes to clear yellow; covered and streaked with bright red or crimson in the sun; flesh, yellowish, firm and crisp, juice very abundant, rich and sugary.

Gravenstein (first size).—October to February. Roundish, irregular, and ribbed or angular; skin, smooth, yellowish green, palest in the shade, the sunny side being streaked with pale red and crimson; flesh, yellowish, crisp, tender, and rich; juice abundant, sugary, and rich.

Golden Winter Pearmain (second size).—October to January. Conical; skin, smooth, deep rich golden yellow, much streaked and mottled with crimson; flesh, yellowish, firm, tender, juicy, rich, with a fine aromatic flavour. This is one of the greatest bearers that I know, scarcely ever missing a crop.

Ribston Pippin (November to April). This is so well known that a description is useless. It is one of the best.

Egremont Russet (second size).—November to April. Ovate; thick skin, rough, and covered with russet in the shade, and with dull yellow russet in the sun, beautifully tinged with bright red; flesh, yellowish, firm, and crisp. A very handsome Apple.

Blenheim Orange Pippin (first size).—November to February. Roundish; skin, yellow, becoming deep orange in the sun, and finely shaded and streaked with dull red; flesh, yellow, crisp, sweet, and juicy.

Lord Lennox (third to second size).—November to March. Roundish oblate, rather compressed at both ends; skin, smooth and shining, greenish yellow in the shade, but covered with dark crimson in the sun; flesh, whitish yellow, firm, crisp, and juicy. It has more crimson, and is much earlier than Fearn's Pippin.

Fearn's Pippin (second size).—November to March. Roundish, and flattened at the ends; skin, pale greenish-yellow, shaded and striped with red on the shaded side, covered with crimson, with a few patches of russet in the sun; flesh, yellowish, firm, crisp, with a fine sugary, and pleasant flavour.

Borsdorffer (third size).—November to January. Roundish, oblate; colour, bright yellow, with a few streaks of red; flesh, crisp, delicate, with a sugary and vinous flavour. A most beautiful and prolific bearer on the Paradise stock.

Cox's Orange Pippin (second size).—November to April. Roundish, even and regular in outline; skin, greenish, changing to yellow; streaked with red in the shade, but entirely covered with bright red on the sunny side; flesh, yellow, very tender, crisp, and juicy.

Kitchen Kinds.

Keswick Codlin (first size).—August and September. Conical; skin, fine pale yellow; flesh, rich, with a fine sparkling juice. Tree, a most abundant bearer, hardly ever missing a crop.

Pott's Seedling (first size).—October to December. Roundish, conical; skin, smooth; light yellow in the shade, but covered with beautiful cerise; flesh, white, crisp, and tender, with a plentiful sub-acid juice. A fine new sort.

Magnum Bonum, Roundway (first size).—November to

April. Roundish, ovate; skin, lemon-yellow, with a few broad broken streaks of pale crimson on one side; flesh, yellowish-white, tender, crisp, very juicy. A first-rate culinary Apple, and may be used in the dessert.

Lady Derby (first size).—August and September. Roundish, ribbed; skin, beautiful smooth shining yellow, with pale dots on the shaded side, the sunny side being covered with a beautiful delicate blush of vermillion, and dotted with dark grey points; flesh, beautifully tinged with pink, tender and rich, very juicy. One of the most beautiful Apples known.

Cellini (first size).—October to December. Roundish-conical; skin deep yellow, covered with deep crimson; flesh, white and tender; juice, abundant, brisk, and pleasant. The tree, when in fruit, is a most conspicuous object; the fruit is of such a high colour that it can be seen from a great distance; a great bearer. The flesh when cooked is of a most beautiful amber.

Lord Derby (first size).—October to January. Conical and very irregular in outline; skin, at first, greenish yellow, which changes to fine lemon yellow as it ripens; flesh, white, melting, juicy, and sweet. This is a most desirable Apple for kitchen purposes. A great cropper.

Cox's Pomona (first size).—October. Ovate, flattened, and angular; skin, yellow, very much streaked with crimson; flesh, white, tender, juicy; a great bearer, and very handsome fruit.

Hawthornden, New (first size).—December and January. Round; of a fine light golden colour, tinged with red next the sun; flesh, solid, juicy, and briskly flavoured. Tree hardy and a great bearer.

Golden Noble (first size).—October to March. Roundish; skin, smooth, clear bright yellow, with a few dark red spots; flesh, yellowish and tender; juice, abundant, with a fine sub-acid flavour. This is one of the most valuable kitchen Apples known. A great bearer.

Royal Somerset (first size).—November to March. Round; skin, whitish yellow, with bright red on the sunny side; flesh, crisp; juicy. This, like the last, is one of the best, either for the kitchen or dessert.

Alfriston (first size).—November to April. Roundish, and irregularly ribbed; skin, light orange in the sun, greenish-yellow in the shade; flesh, white, crisp, and juicy. I have seen fruit of this kind weigh over 1 lb. each. An immense bearer.

Duke of Wellington (first size).—November to March. Roundish. One of the most valuable of all culinary Apples, it can be used from October to June. Tree, vigorous and great bearer. Keeps well.

BRANCH PROPAGATION OF APPLE TREES.

I CAN fully corroborate Mr. Michael Barry's statement (see p. 297) "that branches of Apple trees cut off and planted will grow readily." I have for several years planted them in this way in the Isle of Wight. I learned the plan from a gardener in my employ at Freshwater, and I was so astonished at the result that I was at first incredulous. I could hardly believe that Apple trees of from 4 to 6 feet in height, some of them bearing fruit, were cuttings less than twelve months old. Such, however, was the result. Branches of about 6 feet long, having what your correspondent calls "a rusty-looking" appearance near the fork, should be sawn off just at the "nobbly" part, and may not only be planted with more certainty that they will take root than is the case with cuttings in general, but will make quite respectable trees the next season. The fault I notice is, that they do not appear to make such a vigorous growth at the top as some do, but others send out the strong shoots near the ground, and only turn out a few new leaves at the top. On the whole, however, I have found the plan answer admirably, and have this autumn eaten fruit from last winter's cuttings.

Some time ago you published a letter, in which I stated that I had a Pear tree bearing a second crop. I may mention that I have several doing the same, and one with three distinct crops, easily distinguishable by their different sizes. This, I think, is not uncommon when the fruit crop is scanty, and is followed by a moist summer.

H. W. M., *Forest Hill.*

Mouldy Grapes.—I had a large Vinery of very fine Grapes, a quantity of which I had intended keeping on the Vines for three months at least, although quite ripe two months ago. Judge my surprise when, on going into the Vinery one morning last week, I found every bunch totally covered with a heavy coating of green mould. I had no fire in the house for two or three months up to the day previous to the damage being done. The weather had been bright and fine for the space of three weeks, and then came on wet accompanied by an intensely warm fog, the damp penetrating

through everything. My employer is of opinion that some disease has attacked the Vines, but I maintain that damp is the cause of the mischief, as the Vines are, and have always been, particularly healthy. Am I right?—A SUBSCRIBER. [There can be little doubt that your Grapes have been attacked by mould through want of artificial heat and proper ventilation during the dull wet weather which we have lately had. During the wet autumn of last year, one of my late Vineries showed bunches attacked in a similar way; but by giving a little fire-heat day and night, and ventilating on all favourable occasions, I saved the crop from being injured very much. Of course in the case in question, now that the mischief is past remedy, nothing can be done; but, when the Vines are pruned for another year's crop, they should be dressed well with a mixture of soft-soap or Gishurst, dissolved in warm water, and as much sulphur, lime, and clay as will bring the composition into the consistency of thick paint. This dressing, with attention to heating and ventilation in another year, will get rid of the mould.—WILLIAM TILLERY, *Welbeck.*]

Influence of Stock on Scion.—Some years ago we grafted the Styrian or Keele Hall Beurré Pear on the Citron des Carmes, which is one of our earliest summer Pears, and the result is that the Styrian thus treated is about three weeks earlier than the same kind on the ordinary Pear stock, and better flavoured. We find it to be one of our best Pears for October in this climate, either from a standard or wall, and as regards fine appearance it has few equals. I regret that it is not more known than it is, as many gardeners would find it very useful in cold northern districts.—WILLIAM HILL, *Keele Hall Gardens, Staffordshire.*

Variation Among Seedling Fruits.—Why do seeds of fruit gathered from grafted branches produce wild Apples, in most cases; and, this being the rule, how are the exceptions to be accounted for—I mean the cases in which a good new variety is raised from seed?—FRANKLIN T. RICHARDS. [Seeds sown from fruits gathered from grafted branches, do not, so far as we know, produce wild Apples "in most cases"; but the majority of the seedlings are, as a rule, inferior in quality to the parent. A good new variety of Apple or Pear, raised from seed, is a rare result in comparison with the number of seeds sown. Few seedlings resemble the parent in all respects; if that is wanted, recourse must be had to propagation by grafts or cuttings.]

The Rostiezer Pear.—The varieties of Pears which ripen early have not been regarded as possessing very desirable qualities. The Doyenné d'Été affords us the first taste of the fruit, ripening as it does in the latter part of July, but it is a very small pear, decays rapidly, and the flavour and quality are no more than second or third rate. The Rostiezer, however, is one which forms an exception to early Pears as a class. It is a spicy, juicy fruit, with a sweet, delicious flavour. The Rostiezer hardly falls behind the Seckel in quality, and the tree, although long-limbed and unsightly, is thrifty and a good bearer. The fruit ripens early in August, and the process of ripening is not sudden, but continuous, which is a great advantage. Among the numerous varieties of Pears in our orchards, we have no greater favourites than the Rostiezer, and we recommend its cultivation more generally. It is very handsome, not large, pyriform, with a colour in which golden and carmine hues are blended. The tree does well on the Quince stock, but does best on the Pear stock, as it grows weak, and requires a rich and rather moist soil. It is decidedly the best and most desirable early Pear we have; and its bearing qualities, as Mr. Scott, of the Merriott Nurseries, well observes, are "remarkable."—W. M.

Blackberries.—The present Blackberry season (says the *Grocer*) is a very thriving one, and in many parts of the country the hedges and bushes abound with this useful fruit. Considering its abundance, and the many useful purposes to which the Blackberry may be put, it has occurred to us that a great deal more might be made of it than is done at present. In too many districts the trouble is not even taken of picking the fruit, and immense quantities are thus entirely wasted. In these days of dear food this is to be regretted. In many neighbourhoods, on the other hand, the cottagers pick all the fruit they can, and usually convert it into jam, when, if properly made, its taste is pleasant. If made into puddings or pies also the Blackberry again comes into great use. But, as we before mentioned, in many districts the fruit is almost, if not quite, neglected; and, considering how serviceably it may be made into jam, we are somewhat astonished that more attention is not given to the subject by our large jam manufacturers, who, we are sure, by utilising Blackberries, might turn out a most agreeable preserve. Its cheapness, too, would be a great recommendation. Blackberries can frequently be obtained for an exceedingly small cost; in fact, the labour of picking seems to be the greatest expense connected with the matter.

THE INDOOR GARDEN.

HYACINTH CULTURE.

THE Hyacinth is one of the oldest and most valued inmates of British gardens, and was cultivated in the time of Gerrard at the end of the sixteenth century. Gerrard mentions the single and double blue, the purple and the white varieties existing at that time; and there is every reason to conclude that the Dutch possessed many improved kinds. Parkinson, some thirty years after, enumerates eight varieties, and we still find Hyacinths improving in quality and increasing in numbers and value.

Culture in Beds.—As soon as the summer flowers have been removed from the beds, have them deeply dug and well manured for the reception of the Hyacinths. This should take place in October, and, besides digging the beds, they ought to be neatly edged if on grass. Proceed next to plant after this plan:—First line the bed regularly into divisions of 9 inches between rows, and dibble holes on the lines 8 inches apart, then plant the roots into the holes so that they are 3 inches below the surface. When the bed has become completed it is advisable to plant close to the margin a line of Crocus, inserting them 3 inches apart. The Crocus will be the first to make a feature in the spring, and will continue to impart a lively effect to the bed up to the period when the Hyacinths bloom. When the flower-stems reach a height which endangers their being broken by rain or wind, they should be supported by means of short stakes. These should reach no further than the base of the flower-spike. And, when the flowers have withered, lose no time in removing the flower-stems, but preserve the foliage to the last moment you can allow them to occupy the bed, which will in a great measure favour the ripening of the roots.

Culture in Pots.—Those intended for early forcing should be planted as soon as they can be obtained from the nurseryman, and, instead of plunging them in the usual manner out of doors, have them packed beneath a stage in a rather close greenhouse or frame, sifting some coal-ashes over them to protect the bulbs from drying. Give no water for the next succeeding ten days, then enough to wet the entire ball. Observe that all the bulbs are planted firmly into the soil, and sufficiently deep to prevent them being started out of the soil when the roots protrude from the bulb in a body, as they naturally do. This is prevented by examining them daily and pressing firmly down those that show a disposition to start from their bed. The soil to be preferred for early forcing ought to be light, rich, and porous, while the pots ought to be not larger than 5 inches in diameter, well drained, and the soil made rather firm. Allow the plants to advance in growth, enough to fill the balls with roots before putting them into the forcing-house; and should the young crowns be in any degree blanched, by being covered or shaded, shade them partially the succeeding week after being put in to force. When forcing is commenced, the temperature ought not to be above 50° at night, with a slight rise of heat in the day-time, allowing a few degrees more weekly as the plant advances in growth, making 60° the maximum, with moderate ventilation. Water abundantly both by means of the syringe overhead and supplies at the root, never once permitting the soil to indicate dryness in the least. Place the plants as close to the glass as available, and turn them round now and then, to prevent the stems getting twisted, which will also materially assist the uniform expansion and colouring of the pips. When their flower-stems are somewhat advanced, secure them by means of inserting stout wires, that have been previously sharpened at the points, into the centre of the bulbs. This ensures handsomer plants than when clumsy stakes are stuck in outside the bulbs, and is harmless to the plants also. Plants that are intended for successional blooming need not be put under glass, but plunged in the usual way out of doors, only putting them under glass some time prior to their being wanted to take the place of the first lot. The following varieties are to be preferred for early forcing to numerous others that force indifferently: *Homerus*, single, pink; *La Preciosa*, single, white; *Grand Vainqueur*, single, rose-pink; *Regulus*, lavender, single; *Charles Dickens*, porcelain-blue, single; *Queen of the Netherlands*, white, single; *Amie de Cœur*, single, brisk rose-pink; *Lord Wellington*, soft pink-tinged rose, single; *Argus*, single, purple, with a large porcelain white centre; *Diebitsch Sabalskansky*, lively pink; *Grandeur à Merveille*, single, French white; *Baron Van Tuyl*, single, blue; *Madame Hodson*, light pink; and the *Roman*, single, white, which ought to be planted by the dozen to afford early effect. Pot the white *Roman* in threes in a pot.

Culture for Late Blooming and Exhibition.—It is generally necessary to retard the growth of these bulbs instead of accelerating it; so, to accomplish this better, let October be well advanced before taking the roots out of the packing;

store them away in a dry, airy, cool place, until then, looking them over occasionally to see that they are keeping sound; but do not delay to plant any that show signs of starting into growth. The compost to be preferred for late flowers ought to be heavier and richer—two parts firm fresh loam; one part sheep or cow manure, thoroughly decomposed and moderately dry; one part equal portions leaf-mould and clean sharp river-sand. Mix these ingredients thoroughly; use clean pots 7 inches wide; if new, steep in water twenty-four hours before using. New pots, without the precaution of steeping, discharge a poisonous element into the soil that is certain death to the roots as soon as they reach it. Cover the drainage with Moss or rotten turf-fibre; allow the bulb to be well sunk into the compost and pot rather firmly than otherwise. When all are potted, have them arranged compactly on a hard bottom, and cover 6 inches deep with coal-ashes, leaf-mould, or other light material. Allow them to remain thus for some weeks, until the pots are filled with roots, and the crowns are started, when they ought to be lifted and put into a cold frame without plunging deeper than the rims of the pots, but shading at first, then gradually exposing them to the full light and sun; ventilate freely in open sunny weather, but protect in sharp frost by means of mats. In short, they should be secured from the action of extreme frost; but, at the same time, have the light intercepted by any covering as seldom as possible. Throughout the winter and spring afford as much water as is consistent with maintaining vigorous growth, neither keeping them continuously saturated, nor permitting the soil to get extremely dry. Should the appearance of the plants, as the show-time approaches, indicate their being too far advanced in flower, remove the sashes in the daytime, weather permitting, and only protect the flowers by a canopy of hexagon net or screen. Should the reverse be the case—namely, the flowers too late—the frames must be kept closer; or else, which is preferable, the plants put into a greenhouse near to the glass, where all the necessary requirements, such as tying, staking, and dressing can be performed without exposing them to the wind. As the flowers approach opening, it is well to supply the roots with weak liquid manure as a stimulant to growth, which acts at once with good effect upon the pips, expanding them to greater dimensions, as well as displaying in them higher colours than if only fed with water.

Dressing the Flower-spikes.—Whether for exhibition purposes or not, the appearance of some Hyacinths may be very much improved by having their pips thinned and arranged neatly. The doubles are mostly improved by this, as in many instances their pips are so heavy that they hang slovenly, showing their outline to disadvantage. In proceeding to arrange a spike, the wire support or stake ought to be brought neatly up amongst the pips without disarranging any of them. The top of the wire should only reach the upper extremity of the foot-stalk of the topmost pip. When it is placed erect the pip is tied in this position, and the main stem is also tied securely to the wire support; then the set of pips immediately below the crowning one is raised up and secured in position by means of the crowning pip overlapping their margins; the next series of pips are in their turn raised, so that the one above them overlaps them and supports them in position, and so on; one series of pips is made to support that below it, until all are secured, making a symmetrical whole when completed. Another mode of securing the uppermost series of pips in position is to insert pieces of fine steel wire into the centre of each flower, securing the wire in the main stem, then hanging all the lower flowers to one another.

LIST OF EXHIBITION SORTS.

Double Blues.—*Laurens Koster*, Indigo, *Lord Wellington*, porcelain shades; *Van Speyk*, pale blue.

Doubles of Reddish Shades.—*Koh-y-Noor*, rich pink; *Lord Wellington*, delicate blush; *Susanna Maria*, salmon-rose.

Double Pure White.—*La Tour d'Auvergne*.

Single Blues of various Shades.—*Argus*, bright blue, white eye; *Auriculus Oog*, purple violet, white eye; *Baron Van Tuyl*, dark; *Charles Dickens*, delicate pale blue; *General Havelock*, dark purple; *Grand Lilas*, azure blue; *Haydn*, mauve; *King of the Blues*, deep blue; *Lord Melville*, deep blue; *Marie*, deep purplish-blue, striped indigo; *Prince Albert*, black, with a glow of purple.

Single Red, Rose, and Crimson.—*Cosmos*, rose-pink; *Emme-line*, delicate pink; *Garibaldi*, rich red, immense spike; *Lina*, rich crimson; *Macaulay*, deep rose, striped crimson; *Mrs. Beecher Stowe*, dark rose-pink; *Norma*, waxy-pink, immense pips; *Prima Donna*, shining rose; *Princess Clotilde*, pink, striped carmine; *Rouge Pyramide*, rich red; *Solfaterre*, beautiful orange-scarlet; *Von Schiller*, salmon-pink.

Single White and Blush.—*Alba Maxima*, pure white; *Baron Van Tuyl*, pure white; *Grandeur à Merveille*, delicate blush; *Mont Blanc*, pure white; *Seraphine*, blush snow-ball, pure white, without dispute the most perfect pip, and massive above all others.

Single Yellow.—*Duc de Malakoff*, straw striped; *Rose and Ida*, crimrose-yellow, the finest of this section.—*Gardener*.

THE CULTURE OF DEUTZIAS IN BELGIUM.

HAVING read in a recent number of THE GARDEN an article on Deutzias (see p. 295), I beg to add a few remarks which may be interesting to some of your readers. Last year, when working at Ghent in the extensive nursery of Mr. Baumann, I noticed, in the grounds of the horticultural school at Trochie-mones-lez-Gand, numbers of specimens of *Deutzia crenata* fl. pl., nicely trained as standards, about 4 feet high, with round crowns from 1½ to 2 feet in diameter. These little trees had a charming effect when in bloom, the pretty white pendent flowers giving them the appearance of weeping trees, and, as there were many planted on both sides of the main walk, the whole caught the eye, even from a distance. Low standards, such as these, grown in pots, would be capital subjects for forcing. As to the propagation of Deutzias, I would add another way of making cuttings to the two given in your article, viz., from young soft shoots of plants that have been forced. These, covered with bell-glasses, strike freely in a gentle bottom-heat; or, better, in an earth bed in the propagating house, covered with sheet-glass. After they are rooted, they should be potted singly, and gradually hardened off, and in spring, when no severe frosts are to be feared, they should be planted out in the open ground, where they will form good-sized plants by autumn. The best soil for them is what you have recommended in your article. This method of propagation is especially well adapted for *D. gracilis*, as this sort seldom makes so strong a growth as to form branches 10 to 12 inches long, fit for cutting; however, herbaceous cuttings, i.e., those made of half-ripened wood, will also succeed.

Ealing.

G. UHINK.

FILMY FERNS.

(Concluded from p. 319.)

WE now come to those which require more heat than the greenhouse kinds, but which, nevertheless, do not grow naturally in a very warm temperature. Many fail in their attempts to grow Filmy Ferns, because they imagine that they require a close atmosphere. This is a mistake, however, and although air must be admitted more carefully than is usually done in the case of ordinary stove and greenhouse plants, yet fresh air they must have; therefore, in houses devoted to their culture, air should be conducted underground into the house, and made to pass over the hot-water pipes, before it is discharged amongst the plants. This system will be found of immense advantage during winter, but in summer little heat will be required; still the fact of the external air being thus admitted will prevent cutting draughts, the drying influence of which is so detrimental to the delicate membranous fronds of the plants now under consideration. Those species which we call stove kinds thrive well in a temperature of from about 50° to 75°, the minimum, of course, being the winter heat.

HYMENOPHYLLUM HIRTELLUM.—This is a free-growing handsome species, having a creeping stem and erect fronds ovate-oblong in shape, tripinnatifid, 6 to 8 inches long, and 3 inches broad, light green in colour, and clothed with branched reddish hairs. This kind seems to be peculiar to Jamaica, but, as I have received it from several correspondents in that island, it does not appear to be rare there.

H. SERICEUM.—This is a plant which should, on no account, be watered overhead, because of the dense covering of ferruginous silky hairs with which the fronds are clothed. It has a creeping rhizome, and pendulous fronds, oblong, pinnate, from 1 to 2 feet in length, and from 2 to 3 inches broad. It should be allowed to grow down over some projecting rock, where it will be seen to the greatest advantage. It is a native of the West Indian Islands, Peru, Guatemala, and Brazil.

H. ASPLENIODES.—The rhizome of this is slender and creeping, the fronds from 6 to 8 inches long, pendulous, pinnatifid, oblong-lanceolate in shape, and shining apple green, presenting, when growing upon an old stump of a Tree Fern, a beautiful appearance. Native of Jamaica.

H. ABRUPTUM.—This is a truly beautiful little plant, the fronds of which seldom exceed 2 inches in length, and 1 inch broad; rhizome creeping, fronds broadly oblong, and blunt at the top, pinnatifid, and shining deep green. Native of Jamaica.

H. CILIATUM.—The rhizomes of this are creeping, the fronds

broadly ovate, erect, bi-tripinnatifid, 3 to 6 inches long, dark green, clothed with tawny hairs. I have found this to be one of the freest growing of species. Native of the West Indies.

H. FUCOIDES.—The fronds of this are oblong, tapering to a point, bi-tripinnatifid, dentate on the edges, and from 3 to 6 inches long. It is a native of the West Indies and various parts of South America.

H. ELASTICUM.—This is a very beautiful kind, but at present rare in cultivation. Its fronds are ovate-acuminate, thin and membranous, three times divided, produced from a creeping rhizome and of a deep green colour. Native of Bourbon and the Mauritius.

H. PULCHELLUM.—This is an elegant and distinct species, the fronds of which are pendulous, from 6 to 12 inches long, and bi-pinnatifid. They are produced from a creeping rhizome, and are bright green, densely clothed with reddish-brown stellate hairs. Native of Jamaica.

H. INTERRUPTUM.—This rare species somewhat resembles *H. sericeum*, but it is at the same time abundantly distinct from that species; its fronds are from 1 to 2 feet long or more, and between 2 and 3 inches broad. They are pinnate below, the upper part twice divided, and are profusely furnished with soft hairs. It is a native of the Mountain Forest of Pampayaco, Peru.

H. HIRUTUM.—This is an elegant dwarf free-growing kind, which creeps over blocks of sandstone or the trunks of trees, and covers them densely with fronds. It dislikes to be watered over-head. The fronds are about 6 inches long, pendulous, pinnatifid, and very membranous in texture; they are also clothed with soft tawny stellate hairs. It is a native of the West Indies and Brazil.

H. LINEARE.—This is a handsome and delicate species, and rare with us at present. Its rhizomes are creeping, its fronds pendulous, about 6 inches long, segments narrow, pinnate, the pinnae sparingly clothed with soft stellate hairs. It is a native of Brazil, Columbia, and the West Indies.

H. AXILLARE.—The rhizomes of this are branching, and very slender; the fronds linear-oblong, twice divided, and pendent. This extremely elegant species has the peculiarity of forming side branches, or the pinnae have the power of elongating; indeed, from close observation of this and several species of *Trichomanes*, I am of opinion that barren fronds of these two genera frequently continue growing the second year. It is a native of Jamaica.

TRICHOMANES ATRICULATUM.—This is a splendid and rare species, the rhizomes of which are creeping; the fronds are pinnate, from 6 to 12 inches long, very membranous, pinnae broad and obtuse when barren, when fertile inclining to be pinnatifid, colour deep sea-green. It is one of the finest Filmy Ferns in cultivation. Native of Mountain Forests in Java.

T. RIGIDUM.—The caudex of this is erect; the fronds a foot high, erect, ovate-acuminate, bipinnate, the segments again finely divided and intensely deep green. It is a very beautiful species, somewhat difficult to establish, and appears to be common throughout the tropics. I have received examples of it from various parts of South America and the West Indies, as well as from the Pacific Islands.

T. MEMBRANACEUM.—This is an exceedingly distinct and interesting plant, the stems of which are creeping and tomentose; the fronds are from 2 to 3 inches long, and from 1 to 2 inches wide; obovate, with a cuneate base, and mostly incised at the edges; colour intense deep green. Native of the West Indies.

T. MAXIMUM.—This is a superb species, which produces fronds from 1 to 3 feet long, and from 4 to 6 inches wide; its distinctive character of being nearly the same width throughout rendering it very effective. The fronds are tripinnate and ovate-oblong in shape, and pale green. It is a native of Java.

T. SCANDENS.—The rhizomes of this are creeping and tomentose, the fronds from 12 to 18 inches high, ovate-acuminate, and twice divided, the segments becoming again pinnatifid. The fronds are thin, pellucid, and pale green. A charming plant, and a native of Jamaica.

T. ANCEPS.—I have always found this grand species difficult to establish; indeed, I have to regret the loss of many dozens of it. Its caudex is erect, the fronds are broadly ovate,

bi-tripinnatifid, from 1 to 2 feet high, segments very finely divided as a rule, although I have received it from Dominica very broad; the colour is an intense blackish-green. It appears to be abundant in Trinidad, and is also to be met with in Guiana and Brazil.

T. CRISPUM.—The fronds of this are tufted, lanceolate in shape, and pinnate; pinnæ oblong obtuse, and beautifully crisp, from 6 to 18 inches long, and of a rich deep green. The receptacle is much exserted, which gives the whole plant a very beautiful appearance. It seems generally distributed throughout the West Indian Islands and various parts of South America.

T. BRACHYPUS.—Three times I received this species from Trinidad before I was rewarded with a live plant. Its fronds are scandent and support themselves upon whatever is near at

pinnatifid and slightly arched, and the receptacles are much exserted. It is a native of the West Indies.

T. ANKERSII.—This resembles the preceding as regards its scandent habit; in other respects it is abundantly distinct from it; the fronds are nearly sessile, broadly lanceolate, and deeply pinnatifid at the base; the segments oblong and pinnatifid, firm in texture, and deep green in colour. It is a native of British Guiana.

T. BOJERII.—This is a small species whose fronds are simple and flabelliform, crenate at the edges, seldom more than an inch long, and deep green. It makes a beautiful little plant for clothing a small piece of Tree-Fern stem, and it is capable of being suspended in a Wardian case. It is a native of the Mauritius.

T. KAULFUSSII.—This is a fine robust and erect-growing kind,



GROUP OF FILMY FERNS. (From Mr. W. Hugh Gower's Collection. Drawn by Mr. F. W. Burbidge.)

1. *Hymenostachys elegans*.
2. *Trichomanes trichodeum*.

3. *Trichomanes parvulum*.
4. *T. membranaceum*.

5. *Hymenophyllum asplenoides*.
6. *Trichomanes spicatum* (*Flea spicata*).

hand; they are ovate-oblong and bipinnatifid. In texture they are very thin, and in colour bright light green. It is a native of the West Indies, Brazil, and Peru.

T. CRINITUM.—This is a tufted species of great beauty. Its fronds are pinnate, the segments incised, broadly oblong, from 6 to 8 inches high, glaucous green, and clothed with soft hairs. It is a native of Jamaica.

T. BANCROFTII.—This is a beautiful compact species, the fronds of which are ovate, deeply pinnatifid, crisp at the margins, from 3 to 6 inches high, and pale green. It is a native of the West Indies and Peru.

T. ALATUM.—In this species we have one of the very handsomest of the West Indian kinds. Its caudex is very short, scarcely creeping, and the fronds, which attain nearly a foot, are remarkable for their transparency and pale green colour. They are broadly lanceolate, tapering to a point, deeply

producing fronds from 10 to 18 inches in height and very broad. They are ovate-lanceolate in shape and pinnatifid, furnished with numerous stellate hairs, and are dull green in colour. This species is somewhat rare in cultivation, although many attempts have been made to introduce it in quantity. It is a native of the West Indies and British Guiana.

T. JAVANICUM.—The caudex of this is erect, the fronds lanceolate, from 6 to 10 inches high, pinnate; the pinnæ somewhat cuneate at the base, and obtuse at the apex, upwards of an inch long, and deep green. The whole plant is somewhat harsh in texture, but this in no way detracts from its beauty. It is a native of the Indian Archipelago.

T. LUSCHNATIANUM.—This, when properly grown, is very beautiful, but if neglected, it turns black and becomes an eyesore. It should never be watered overhead, and it requires a warm corner in winter; this, at least, has been my experi-

ence of it. It is a fine climbing species, the fronds of which are sessile, oblong-lanceolate, deeply pinnatifid, from 10 to 18 inches long, and rich bright green in colour. It is a native of Brazil.

T. MUSCROIDES.—This is a dwarf creeping plant of free growth, producing simple, erect, oblong, bright green fronds from 2 to 3 inches long; they are very pellucid and undulated on the margins. This species soon covers a block of wood or sandstone with a dense green carpet. It is a native of the West Indies.

T. SINUOSUM.—This is a beautiful species when placed upon the stem of a Tree Fern, or in some similar position, in which its delicate pendent and pellucid fronds can be seen to advantage. The rhizomes are creeping, producing great numbers of lanceolate pinnatifid fronds, which vary from 4 to 9 inches in length; they are pendent and shining pale green in colour. Native of the West Indies and Peru.

T. SELLOWIANUM.—This is a species which cannot fail to charm even the most indifferent observer; it belongs to the *T. crispum* section. Its fronds, which vary in height from 6 to 12 inches, are linear-lanceolate, and deeply pinnatifid, the segments being oblong obtuse, very transparent, and bright green in colour. It is a native of Brazil.

T. ANGUSTATUM.—This delicate little species may be kept in the cool corner of a stove. Its rhizomes are slender, and grow freely. Its fronds are lanceolate and pinnate, the segments becoming again twice divided, and very narrow. They are bright green in colour, and are from 3 to 6 inches long. It is a native of the West Indies and various parts of South America.

T. FLORIBUNDUM.—This is a singular name for a Fern, but it, doubtless, refers to the numerous exerted cup-shaped involucre, which form such a conspicuous feature in this species. Its caudex is tufted, the fronds pinnate, the pinnæ being from 2 to 5 inches long, the terminal one being much longer, whilst the fronds vary from 6 inches to a foot and a half in height, are very transparent, and bright green; when fertile, beautifully fringed all round the edges with the exerted involucre. When barren, the mid-rib of the frond is prolonged, and, bending down to the ground, takes root, and forms a young plant. It is a native of the West Indies, and various parts of South America.

T. MEIIFOLIUM.—This is a superb plant, very rare, and, I imagine, difficult to manage; it is erect in growth, producing fronds from 6 to 20 inches long, ovate-lanceolate, bipinnate, the segments again being very finely divided, and the whole curled, so as to have a beautiful crisp appearance. I know of nothing so finely divided as this species except the wonderful *T. pluma*, which, unfortunately, is not alive in our collections. It is a native of Java.

T. FILICULA.—The stem of this is creeping, and densely clothed with black woolly hairs; the fronds, which are ovate-lanceolate, and twice divided, are from 3 to 6 inches long, opaque, and dark green. This species appears to be widely distributed, and consequently varies considerably in size and appearance. It is a native of the East Indies.

T. KRAUSSII.—This is an elegant little creeping plant, the fronds of which are narrow, from 2 to 4 inches long, oblong, deeply pinnatifid, and very deep green. It forms a charming object upon a slender Tree-Fern stem. Native of the West Indies.

T. LONGISETUM.—This is closely allied to *T. meifolium*, and equally beautiful; the fronds, which are erect and very finely divided, are from 6 to 12 inches high, the stem is winged, and the colour dark green. It is a native of Bourbon, Borneo, &c.

T. REPTANS.—This is a very small creeping species, well suited for Warden cases, on account of a good specimen occupying but a small space; its fronds are wedge-shaped, from 1 inch to 1½ inches high, and bright green. It is a native of the West Indies.

FEEA SPICATA.—This beautiful plant has been separated from the genus *Trichomanes*, because it produces a separate and distinct fertile frond; in other respects the general appearance is the same as that of the *Trichomanes*, and it thrives under exactly the same treatment. The fronds are tufted, the sterile ones from 3 to 6 inches long, broadly lanceolate, pinnatifid,

spreading, and very dark green; the fertile ones spike-like, erect, and bearing two rows of pendulous bell-shaped involucre. It is a very beautiful and interesting plant, and apparently abundant in the West Indian Islands. It is, nevertheless, a somewhat difficult subject to establish.

HYMENOSTACHYS ELEGANS.—This is a plant separated from the other Filmy Ferns for two reasons—first, the fruiting fronds are dissimilar to the barren ones; and, secondly, because the sterile ones have netted veins, whilst in the genus *Trichomanes* they are forked and free. The plant in question is a very beautiful one; the fronds are tufted, the sterile ones from 6 to 12 inches long, broadly lanceolate, pinnatifid, and deep green. The rachis is frequently prolonged, and, rooting at the apex, produces young plants; fertile fronds erect, flat, scarcely half an inch wide, having the involucre seated in the margins. Native of the West Indies and various parts of South America.

TODEA WILKESIANA.—This is a free-growing plant, and differs from the species of this genus already named on account of its forming a slender stem, which, with age, attains a height of 3, 4, and even 6 feet, and the diameter of an ordinary walking stick. The fronds are twice divided, from 1 to 2 feet long, thin and membranous, and deep green in colour. Native of the Fijis. G.

The Double-flowered Myrtle as an Indoor Decorative Plant.—Everybody acquainted with flowers knows the lovely double-flowered Myrtle, which is a very desirable plant both for bouquet work and for decorative purposes generally. If a neat bushy plant looks very nice when in bloom, the beauty of it is much enhanced if trained as a standard with a stem about 2 feet high. However, as the double-flowered Myrtle grows rather slowly, it is a good plan to graft it on the common broad-leaved kind (*Myrtus communis*), of which rooted cuttings, when planted out in suitable soil, make in one season plants fit to be grafted on at the above-mentioned height. The best time to perform this operation is in the end of August or beginning of September, when the branches of the Myrtles are sufficiently ripened, and the plants must be kept in close air until the scion has taken, after which period they may be treated as is commonly the rule to deal with plants in such circumstances, that is to gradually harden them off, to untie the ligatures, and to cut away the branches of the stock. It must be understood that all the branches must not be cut clean off at once, as that would very likely cause the death of the plant from overflowing of sap, while, on the other hand, these branches assist to strengthen the trunk until the scion has grown sufficiently to consume all the nourishment the roots furnish. Care must be taken to get a well-shaped crown, therefore a judicious stopping of the branches must be made in time, and, of course, they must be pruned annually in spring. Plants grown in this manner are to be seen at Mr. Baumann's, in Ghent, where their very ornamental appearance commands the admiration of every visitor.—G. UHINK, *Ealing*.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Rudbeckia Neumannii.—Permit me to inform "W. T." (see p. 323) that this plant is a garden variety of *R. laciniata*, raised by M. Neumann, of the Jardin des Plantes, at Paris. It is also known as *R. laciniata angustifolia*, *R. digitata*, and *R. levis*.—W. M.

Tecoma jasminoides.—I have a plant of this in a 12-inch pot in peat and silver sand in a cool airy conservatory. It grows freely, but does not blossom. How can I induce it to do so? Should it be kept in heat?—W. H. M. [Your *Tecoma* ought to bloom in the situation named, if not so much shaded as to prevent it from ripening its wood. Many plants grow freely but do not flower, simply because their wood does not get properly ripened by full exposure to sunlight.]

Vanda cœrulea.—This is one of the most beautiful of all winter-flowering Orchids, easily grown in a moderately cool house, and deserving of general cultivation. I saw a fine specimen of it in Messrs. Veitch & Son's Nursery at Chelsea the other day, bearing two fine spikes, and one had been cut off a day or two before. Altogether the plant bore between fifty and sixty flowers, and was a perfect example of good cultivation. This *Vanda* should have as equable a temperature as possible or it is apt to spot. It is remarkable as being the best of the very few blue-flowered Orchids we have in cultivation.—B.

Adiantum cuneatum var. *elegantulum*.—This is a fine foliaged variety of the common wedge-leaved Maiden-hair Fern, and, owing to its extreme grace and elegance, it promises to become a favourite with all bouquetists and floral decorators. If used for a bouquet or for grouping along with flowers in a vase, it can be spread entirely over the flowers without hiding them, as it then presents the appearance of a thin film of soft green colouring, through which each blossom is plainly visible. The fronds are as large as those of *A. cuneatum*, the only difference being the much smaller divisions. I lately saw it in Mr. Williams's Nursery at Holloway, where it grows very freely and is much admired.—H.

THE FLOWER GARDEN.

A TRIAL OF ASTERS.

MESSRS. BARR & SUGDEN did good service to growers of flowers in general in giving a large and comprehensive trial of Asters in their bulb garden, at Tooting, during the past summer. It was not a test merely of the varieties of any one firm, but of many firms, and particularly of novelties in Asters (of which many are offered annually), whencesoever obtained. These Asters were all sown in the open ground about the middle of May, and all did well, the moist summer having suited them exactly, and a good development resulted. The sandy dark loam of the bulb garden afforded the Asters a rare soil for rooting freely and firmly, and they were nearly all in full bloom at the end of September. If any one lesson was taught by this trial, it was this—Beware of assumed new types, as well as novelties, in Asters. There were plenty of these. Catalogues of German and other houses had been ransacked for them, and the result was anything but cheering; rubbish predominated, and sometimes rubbish utterly unredeemable in character. Perhaps the hungering after novelties that prevails in this country has something to do with it; Continental as well as home novelties are annually looked for, and as surely annually provided, and it is impossible, perhaps, that all can be “valuable acquisitions.” The trial began with the original China Aster, as introduced some some years ago by Messrs. Vilmorin and Co., of Paris, a tall-growing type, something in the way of Truffaut’s Aster, but much inferior. Then came the quilled Asters, the old quilled German Aster being as good in quality as any of its professed improvements. Reid’s Aster is a good quilled type, and has a nice branching habit. On the other hand, the globe-quilled Aster is a bad type, and not worth growing; it has an open centre, and a circumference of flat petals. In the flat-petalled section the tall Chrysanthemum-flowered represents a very fine type, bearing large, full, symmetrical flowers like those of the Victoria. The improved Rose Asters, which are represented as being intermediate between the large-flowered Imbriqué and the Pæony Perfection of Truffaut, had poor flowers, both of the recurved form like the tall Chrysanthemum-flowered, and the incurved form like Truffaut’s. The Cocordeau, or Crown Aster, was represented both by a tall flat-petalled and a dwarf quilled form; it is a charming Aster, because invariably composed of a coloured centre, edged with a broad belt of another hue, but in point of substance generally deficient. The Hedgehog Aster, of whatever type, may be set down as unworthy of cultivation; the florets are all tubular-shaped. The small-flowered Pomponé is worth growing, because, being profuse of bloom, it is likely to prove very useful to cut from. The flowers have quilled centres, with a circumference of flat petals. The Victoria Aster is a truly regal one, and bears enormous flowers of great fullness, and it is, *par excellence*, the Aster for exhibition. It grows from 15 inches to 18 inches in height, and the flowers represent half a ball, the flat petals being densely laid one on the other in a most symmetrical form. The colours, originally limited, have of late years been extended, and now quite a dozen distinct hues can be had. The novelties known as the Quilled Victoria and the Honeycombed Victoria may honestly be set down as rubbish, while the dwarf Victoria appears to be simply a reproduction of the dwarf Chrysanthemum-flowered under a new name. The new Schiller Aster is an inferior type of dwarf growth, and, in common with other dwarf forms, not worth the trouble of cultivation. The Giant Emperor Aster is of a large coarse type, the flowers disfigured by having great open yellow centres. It should be at once expunged from catalogues. The German Emperor is a dwarf, large-flowered, incurved type, of no great quality. The dwarf Pyramidal is a good Aster for pots, having a stiff erect growth, and is very free. Better still is Boetze’s dwarf Bouquet, which has a very dwarf growth, and nice flat-petalled flowers; there is nothing better than this type for cultivation in pots. The Imbriqué Pomponé Aster is a taller form of Boetze’s, and less valuable, because of loftier growth. Truffaut’s Pæony-flowered Perfection, with its noble incurved flowers, so fine for exhibition purposes, is a magnificent Aster, of great size and symmetry; some of its striped varieties are very beautiful. It is of tall growth, and somewhat erect in habit. It requires to be grown well to produce its flowers to a fine stage of development. The dwarf Chrysanthemum-flowered is of low growth, and of a stiff habit; the flowers are very large and full; it does well as an edging to taller varieties, and also for pot culture. A selection of the very best made from the foregoing would give common German quilled, Reid’s quilled, tall Chrysanthemum-flowered, dwarf ditto, Victoria, and Truffaut’s Pæony-flowered, with the small-flowered Pomponé and Boetze’s dwarf Bouquet for pot work. There is lying by my side, as I write, a German catalogue of Asters that contains the astounding number of fifty-eight assumed types, most of which have a number of varieties. Many of these were included in the trial at Tooting, and passed over

because unworthy of notice. If the German seedsmen would confine themselves to ten or twelve distinct types, there would be included all that are worthy of cultivation, and quite enough to satisfy even a gluttonous grower of this useful flower. Henceforth I shall confine myself to those enumerated above, for they give me all I want, and really all I can desire. S. A.

Heather Edgings.—Few have any conception of what an effective edging for large beds or borders can be formed of the common Heather, or Ling, as it is often called. The more choice kinds are much used in clumps in shrubberies, but, until the other day, I had no idea that the wild Ling could be effectively employed as an edging plant. A friend of mine has a short drive up to the house, and on the right hand side is a wide border filled with standard Roses and backed by a hedge of the same trained against wires; under the standards are bedding plants, the whole being finished off with a wide border of Heather next the narrow band of Grass which separates the drive from the border. On the left side is the lawn, along the edge of which is a narrow ribbon border about 3 feet wide, along the centre of which is a row of standards. Each side of the band is edged with Heather, next the Heather are *Calceolarias*, and in the centre a row of single purple *Petunias*. Though the latter are a little injured with the frost, the effect as a whole is very good, and a few weeks earlier it must have been charming. The Heather used in this case was got from a common near at hand, care having been taken to see that it was all of one variety, and that it was cleared of all weeds and Grass.—A. H.

The Flowers of Biarritz in Spring.—Many of the Biarritz wild flowers are noticeable for the sweetness of their scent. The *Immortelles*, growing down on the rocks close to the sea, have a strong sweet honeyed perfume; also the single white Stock, whose scent is very sweet; these two are found always on the shore, and do not seem to grow inland at all. The pink *Daphne* (*Daphne Cneorum*) has an almost overpowering scent; its blossom is a bright pink. The wild *Genista* here is a sweet-smelling kind. A little way inland, the bushes and hedges are covered with a bright blue *Lithospermum*; it is called here “*Fleur des frontières*.” On the banks is abundance of a low white *Cistus*, about as large as a white Dog-rose. On the loose sand, on the way to the lighthouse, we find the strongest-scented flower of all, a single pink *Dianthus*, that is like a whole perfumer’s shop. A large white *Cephalanthera* grows here, and on the newly-laid turf of the Empress’s late garden has grown the Bee Orchis and a dark red *Serapias*. Near Biarritz is the creeping *Smilax*, with prickly leaves and a white blossom, also the Hoop-petticoat *Narcissus*, which has only a centre compared to our native one, and therefore its name. There are fields full of Cotton Grass and Royal Fern (*Osmunda regalis*).—M. A. D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Lilium candidum aureo-marginatum.—This, the best of all the variegated Lilies, is now a striking object in Messrs. E. G. Henderson’s Nursery at St. John’s Wood. Its leaves are from 5 to 7 inches in length, and are broadly margined with rich golden-yellow.

Fuchsias and Yuccas intermixed.—You commend the more frequent use of Fuchsias. When lately in Belgium I saw a large bed which was very striking. It was composed entirely of *Yucca filamentosa* and *flaccida*, with pots of the tall-growing Fuchsia sunk between the Yuccas.—H. N. ELLACOMBE.

Gowan and Daisy.—A correspondent, who has sent us some further remarks on this subject, supports Mr. Jackson Gilbanks’ opinion, that Gowan is not the Scotch for Daisy. The expression “as yellow as a Gowan” our correspondent regards as conclusive that the Gowan cannot be the Daisy. Here, we think this controversy must cease.

The Twin-flower.—A contemporary remarks that “we lately saw *Linnaea borealis* growing with the utmost freedom and vigour under circumstances which were somewhat peculiar. It was planted in pots and placed in a cold, moist, and rather shady greenhouse.” It certainly will thrive in such a position, but it should be generally known that there is no foundation for the opinion that the plant is difficult to grow in the open air in gardens. It thrives in any moist peat border, or Fernery in the open air.

The Lilac-flowered Fuchsia.—Referring to *Fuchsia syringeflora* (see p. 177), Mr. Porcher, President of the Orleans Horticultural Society, writes as follows to the *Revue Horticole*:—“When grown in small pots, the effect of *Fuchsia syringeflora* is indifferent, but, when grown in large pots, or in the open ground, it forms splendid bushes 3 or 4 feet high, of fine shape, and bearing an abundance of flowers all the summer, and, for some time on into the winter. This plant was introduced in 1849, by M. Van Houtte, of Gand, who considers it to be a variety of *F. arborescens*.”

Cocoa-nut Refuse.—Many complain that not only do they see no good in the use of Cocoa-nut refuse, but much evil—even to rotting their plants. I, on the contrary, consider it a most valuable help in the garden. But, occasionally, it produces a white dry Fungus, which would certainly be most hurtful. I believe that this always arises when the fresh refuse is buried in ordinary garden soil. If it is wished to mix it with the soil, it should be quite rotten. But it may be used very fresh if mixed with nothing but coarse sand. Its best use, however, is as a mulching, for which purpose, also, it may be used quite fresh.—H. N. ELLACOMBE, *Bilton Rectory, Bristol*.

THE ARBORETUM.

AUTUMNAL CHANGES IN FOLIAGE.

TREES have again assumed the "sere and yellow leaf," though variations in foliage in this cloudy, foggy, weeping climate, are never very striking. True, the Virginian Creeper, *Vacciniums*, Sumach, and a few other shrubs and trees, are not devoid of bright colouring in most seasons, but the years are few and far between in which really grand autumnal colouring takes place in a general way in the woods, plantations, shrubberies, hedgerows, orchards, and gardens of this country. During a long life-time I have only observed two really grand sights in the way of autumnal foliage colouring. The first happened in the autumn of 1818, after the driest and hottest summer of the present century, followed by a hot, clear autumn, when frosts set in, after hot, clear sunny days, with drying easterly winds, and the glass or thermometer indicating from 40° to 50° lower at sunrise than at the middle of the day; in short, hot, clear days following frosty mornings. These are what produce those brilliant colours on our autumnal foliage in the forest, field, and garden, with which all are delighted, and which was the case on this occasion. The long drought and heat matured the foliage and young wood, and better fitted it to stand the morning frosts that produced the tinges in question. Again, in the year 1868, after a dry summer and a good deal of sunny hot autumn, clear days and nights, and frosty mornings in September and October, the autumnal tints throughout the country were truly brilliant, rich, and varied. In America, where the autumnal tinges and colouring are annually so striking, the seasons are warm and bright, and are characterised by sudden changes. In a letter before me, dated New Jersey, 13th September, it is stated that the thermometer stood in the shade at mid-day at 84°, there being clear sunshine and clear nights; while in the mornings, at sunrise, it stood at from 30° to 32°. Thus a range of above 50° in a few hours acting on well-ripened foliage in a clear, bright, vigorous atmosphere readily produces those brilliant autumnal tinges of colour of which all travellers in that country speak so enthusiastically. Here with us such seasons are, as I have said, few and far between. We generally get nine out of ten seasons dark, gloomy, cloudy, and muggy, producing, in the first place, unripened, soft, thin foliage, subject to early mildewed effects, blotches of various colour and extent, resulting in dirty rusty forms, as affected by various atmospheric influences. Thus, sometimes, in the morning in autumn and spring we get a few hours of hot cheering sunshine, and early in the afternoon a thunderstorm—hail and sleet, and, while all is wet, at sunset frost sets in, and the short Grass becomes white and crisp under one's feet; by nine or ten p.m., again, we get mild rainy weather, changing early next morning or by midnight of the same day to frost; the next morning, again, another severe white frost locks up vegetation, while soaked with excessive moisture. Two frosts, in short, are quite common in this country with rain between them, between sunset to sunrise. Often I have seen it freeze three times in one night at intervals between cold rains. Under such conditions, can it be wondered at that we get the seared, rusty, mildewed, early autumnal change of foliage which we have, in place of the grand forest colouring, after a hot dry ripening season, which takes place in better climates than our own? Besides, how often do we see the Ash, Walnut, and many of our other trees and shrubs, denuded of foliage in one night, owing to a sudden morning frost following a wet night. The equinoctial gales followed by heavy storms and some white frosty mornings which occurred this year between the 18th of August to the 15th September, had a terrible searing, or rather burning effect, on all kinds of foliage, fruits, and flowers, as well as on vegetation in general. Nevertheless, some of my neighbours in this part of the country, attribute such effects to the use of sulphuric acid, which they say is also at the root of the Potato disease. A wonderful discovery, certainly, yet not so very wonderful after all, in a place in which witchcraft and sorcery are still persistently believed in by many. With equal good sense might it be asserted that the contents of Macbeth's caldron exercised a baneful influence on the vegetation of the present day.

Exmouth, Devon.

JAMES BARNES.

MOVEMENT OF THE SAP.

ON reading over the many interesting articles on this subject, contained in the last volume of *THE GARDEN*, one cannot but be struck with the very little importance accorded in most of them to the part played by endosmose in the circulation of sap in plants. And not only in these writings, but also in those scientific works professing to sum up the researches and opinions of acknowledged authorities. In "*Deschanelle & Focillon's Dictionary of Sciences*" we find a most able and detailed compilation of all that science has acquired on the subject up to the present day, forming a theory on

vegetable circulation far more complicated than people generally would care to have it. But even here, where all the numerous and complicated organs are carefully detailed, and the movement of the fluids searched out, there appears to exist a certain disregard of endosmose and certain lacunæ, which it alone (in the present state of science) would be likely to fill up. True, it is there said, that the crude sap penetrates into the roots by endosmose, and further on, that the movement of the ascending sap is explained by endosmose, which causes it to creep upwards through the tissues of the plant, and that to this force may be added capillarity in the numerous minute vessels of the fibrous and vascular tissues, and also the partial evaporation of the liquid in the upper parts of the plant by means of the leaves, &c. Now to creep upwards through tissue vascular or fibrous, there must exist on the other side of the cell's-wall, to take the place of the first fluid, a second one, of a different nature (though having affinity for it, or at least capable of mixing with it); this is the law peculiar to this force, and without which it cannot act. When it does act, the two liquids pass each other by the same road, as telegrams do now-a-days going both ways at the same time on a single wire. Here no mention is made of the second fluid, a most important omission. With regard to the road followed by descending sap, it is said that it descends between the bark and the wood in the network of the latiferous vessels (interstices between the cells of the tissue), where it puts on another and special form, which has caused it to be called latex, or true sap, &c.; it, the descending sap, is also found coming down in a continuous stream in, not between, the cortical fibres. Now fibres, or fibrous tissue, is composed of elongated cells stuck against one another and having no communication with one another. If, therefore, the descending sap passes in them *i.e.* through them, there must be a second liquid to ascend in its place; then, in another place, speaking of the ascending spring sap—it is diffused everywhere; the medullary cells, the fibres, the vessels, the ducts (in French, *méats*), are alike all gorged with it. How could the sap enter some, if not any of these, but by endosmose and by the help of another liquid leaving them simultaneously? It would certainly require very great experimental knowledge in micrography to be able to prove anything definite in the case, but these instances, and hundreds of others which might be picked up in all such scientific works on the subject, would tend to make one suppose that, in some instances at least, the two saps merely exchange places and that they do not take two separate roads.

FRED. PALMER, *Versailles*.

The Old Tree in Wood Street, Cheapside.—Leigh Hunt says, "A child was shown to us who was said never to have beheld a tree but one in St. Paul's Churchyard (now gone). Whenever a tree was mentioned, it was this one; she had no conception of any other, not even of the remote tree in Cheapside." The tree here referred to still stands in Wood Street, which runs between Cheapside and London Wall, and the care with which it is preserved indicates the strong love of nature that has a lodgment even in the hearts of men who seem to take an interest in nothing but daybooks and ledgers, the prices of shares and stock, and the Bank rate and interest. In "Old and New London," Mr. Walter Thornbury says: "That pleasant tree at the left-hand corner of Wood Street, which has cheered many a weary business man with memories of the fresh green fields far away, was for long the residence of rooks, who built there. In 1845 two fresh nests were built, and one is still visible; but the sable birds deserted their noisy town residence several years ago. Probably, as the north of London was more built over, and such feeding-grounds as Belsize Park turned to brick and mortar, the birds found the fatigue of going miles in search of food for their young unbearable, and so migrated." The same writer adds: "The terms of the lease of the low houses at the west-end corner are said to forbid the erection of another storey or the removal of the tree." It is pleasant to think with Mr. Thornbury that this restriction arose from a love of the solitary tree.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Trees and Shrubs for Churchyards.—Can any of your readers tell me what are the best trees or shrubs to plant in a small churchyard?—*BACULUM*.

The Sugar Maple as a Street Tree.—The Sugar Maple is said to be the best of all the American trees for the purposes of shade and ornament. The foliage is dense, and the tree forms a rounded well proportioned head. It also has the advantage of being free from insect enemies. So say the Americans, who ought to know.

A Pine Tree Pest.—The reports of the Department of Agriculture at Washington state that the Black Spruce and Balsam Firs of northern New York are infested by a parasitic plant belonging to the genus *Arceuthobium*, related to the Mistletoe. In the vicinity of Warrensburgh, on the Hudson, about 75 per cent. of all the Abies were found to be infested, groups of forest trees, 40 feet in height, being dead and bearing the peculiar marks of the infection.

TREE-CLIPPING IN OLDEN TIMES.

WHEN "captive Greece captivated her fierce conqueror, and introduced the fine arts into Latium" (to use the words of Horace), we may not unreasonably conclude that whatever she possessed of novelty or excellence in horticultural matters was also speedily adopted by the all-appropriating Romans. The sumptuous gardens of the wealthy Italian nobles already displayed a tendency towards that highly artificial mode of embellishment by means of grottoes, fountains, statuary, &c., which ultimately became the distinguishing feature of the national style of gardening, and no expense appears to have been spared in introducing any fresh design which might add to the variety of effect so much sought for. We can well imagine, then, how the first conception of clipping the dense foliage of the Box, the Yew, the Cypress, and other evergreen trees and shrubs into shapes of various kinds must have been welcomed as an emanation of true genius, and reflected a

embellishments as consisted of these cunningly-clipped designs, together with the skilful arrangement of arbours and bowers, and any other use into which trees and shrubs could be trained, trimmed, or tortured. The wide-spread, and by no means ephemeral, rage for these clipped monstrosities, which led the Italians into many absurd violations of pure taste in the embellishment of their gardens, was not confined to that nation alone. Not many years have passed away since our own British gardens contained numerous examples of "topiarian" art, mostly of such rude execution as to reflect but little credit on the artists' abilities; and even at the present day there still linger, as at Elvaston and some other old country seats, a few representative specimens, upon whose old-world forms the attentions of an annual clipping are affectionately bestowed. In such instances, however, we are fain to believe that these survivors of an almost completely exploded phase of horticulture are cherished chiefly for the



Curiosities of Tree Clipping.

due amount of honour upon its happy originator. There was a certain quaintness in the idea of thus parodying the works of the sculptor by a dexterous use of the gardener's shears, which seems to have at once caught the popular fancy, and secured for itself an immediate and wide-spread adoption. The varied natural forms and sizes of the trees and shrubs thus operated upon also afforded wide scope for the ingenuity of the *topiarius* (or landscape gardener) in producing a diversity of figures, either amusing from their grotesqueness, or admirable from the skill displayed in their close imitation of some particular subject, living or inanimate. From the universal and long-continued exercise of this fantastic art in Italian gardens, it appears to have been one of the chief functions of the landscape gardeners of the time, and to have arrived at the dignity of a recognised and permanent branch of the profession; so that, at length, the term "topiarian" came to be more particularly associated with such garden

sake of family associations and traditions, and not from any recognition of their value as ornamental adjuncts. We may rejoice that the system and its practice have well-nigh died out. Apart from the passing smile provoked by the grotesque transformation of a living shrub or tree into some shape not its own, it serves no purpose whatever, and the most ingenious results of its puerile aspirations in no wise compensate for the destruction of the natural grace and beauty of the trees and shrubs which are sacrificed to its requirements. In the present age, however, there is a disposition to make a more rational use of our wonderfully varied resources of horticultural material, by so mingling the *utile* with the *dulce* in our garden arrangements, that, in studying and obeying Nature more, we shall at length win from her the secrets of her own untaught loveliness; and it is as well the duty as the privilege of every faithful horticulturist to aid in hastening the advent of such a desirable consummation. W. M.

WEATHER NOTES AND PROVERBS.

THE following interesting paper on this subject was recently read by the Rev. C. H. Smith, before the Wiltshire Archaeological Society:—Now that the advance of education is driving away our folk-lore, and the vast accumulation of modern literature is thrusting out of sight the quaint old sayings, generally replete with wisdom and truth, though clad in ever so homely a garb, which still linger in our country parishes, it is time for the archæologist to rescue them from oblivion, and to collect and store up these pithy maxims, the result of patient observation of Nature's prognostics; and which (I will venture to say), being founded on such true principles, are often more to be relied upon than the *dicta* of the Meteorological Society, with all its delicate and sensitive instruments, its barometers, its wet and dry bulb thermometers, its aneroids and ozonometers to boot; for these may be faulty and deceive us, but Nature never errs, and, if we can but read her aright, spreads out the page with undeviating accuracy. Now, the labourer, and, above all, the shepherd, employed all his life long on our open Wiltshire downs and fields, has remarkable opportunities for studying the sky, and noting the signs of the seasons; and I have very often been amazed at the accuracy with which he can forecast a change in the weather, when to ordinary eyes not the slightest symptoms of alteration were apparent; but this is an instinct derived from constant observation, and to a mind not overburdened with many thoughts, has become a habit monopolizing no small part of his attention. It is an instinct, too, which depends more upon prolonged experience than abstract reasoning; and it is an instinct shared, though in still larger measure, by many branches of the animal and even the vegetable world, beasts and birds, and insects and plants. Still, let us be just to the humble countryman, who is not guided as these latter are, by a natural born instinct, in regard to the weather any more than his fellows are in other conditions of life; but let us allow him the credit he deserves for his careful and accurate observation on a subject which requires many years' experience, and no little balancing of evidence, before an accurate verdict can be arrived at.

Weather Proverbs.

I proceed now to mention such of the proverbs as are in most general use among us; but I would premise that some of them are common to every other county in England. How true is the well-known saying—

Evening grey, and morning red,
Sends the shepherd wet to bed:
Evening red, and morning grey,
Is the sure sign of a very fine day.

And this—

Mackerel sky, mackerel sky,
Never long wet, and never long dry.

And this—

Rain before seven,
Fine before eleven.

And this, again—

A rainbow in the morning
Is the shepherd's warning;
A rainbow at night
Is the shepherd's delight.*

which is only our homely way of expressing the famous lines of Byron—

Be thou the rainbow to the storms of life,
The evening beam that smiles the clouds away,
And tints to-morrow with prophetic ray

Then, again, how true is the old Wiltshire saying—

When the wind is north-west,
The weather is at the best;
But if the rain comes out of the east,
'Twill rain twice twenty-four hours at the least.

These are general proverbs, applicable to all times; but we have an unusual number of proverbs in Wiltshire which describe the evils of too advanced vegetation in a precocious spring; indeed, on a careful comparison of all the Wiltshire weather proverbs with which I am acquainted, by far the larger portion refers to this fact, which is perhaps brought home to us in our confessedly cold county more than elsewhere. Thus, for January, we have—

If the Grass grow in Janiveer,
It grows the worst for't all the year.

And again,

A January spring
Is worth nothing.

For February,

Of all the months in a year,
Curse a fair Februeer.

* In considering this prognostic, it should be borne in mind that in the former case the rainbow will appear in the west, and in the latter in the east.

So again for March, in true Wiltshire language,

As many mistises in March
So many frostises in May;

and the well-known adage,

If March comes in like a lion, it goes out like a lamb,
If it comes in like a lamb, it goes out like a lion.

For April again,

A cold April
The barn will fill;

and again,

April showers
Bring summer flowers.

And another, lauding the prolongation of the fierce winds of March

When April blows his horn,
'Tis good for both hay and corn

while even for May we have

Mist in May, and heat in June,
Makes the harvest come right soon;

and again,

Who doffs his coat on a winter's day,
Will gladly put it on in May.

And for June,

A dripping June,
Brings all things in tune.

Every one of these Wiltshire proverbs, relating to the first six months of the year, proclaims the acknowledged fact that a prolonged winter and a tardy spring bespeak more abundant crops and more assured plenty than the pleasant, however unseasonable warmth which sometimes gladdens our hearts in winter and early spring. Nor is this belief peculiar to our county or even to England; it is held quite as much in the South of Europe, for the Italians have a proverb, "January commits the faults, and May bears the blame;" and it is a common saying in Spain, "A year of snow, a year of plenty." Moreover, that such premature mildness of the seasons does not, in reality, advance vegetation, everybody who possesses a garden knows to his cost; and here, again, we have several famous Wiltshire proverbs relating to this fact, and containing very weighty truths. The one runs thus:—

Be it weal, or be it woe,
Beans blow before May doth go.

Another says—

Come it early or come it late,
In May comes the corn-quake.

And a third—

Plant your Tatars when you will,
They won't come up before April.

But, again, we have Wiltshire sayings which affirm what I believe to be an equally undeniable truth, that, together with a prolonged winter, and a dripping spring, a dry summer is more to be desired by the husbandman. That, however, is a season we scarcely seem to have experienced this year, when the old Devonshire proverb, applicable enough in that rainy county, might have been quoted with much truth even here—

The west wind always brings wet weather;
The east wind wet and cold together;
The south wind surely brings us rain:
The north wind blows it back again.

Shewing that, from whatever point of the compass the wind blows rain is sure to fall. That, however, I am glad to think is quite an exceptional state of things here; and it is very rarely indeed that we in this country experience so wet a summer. To return to the point we were considering, we have an old saying in North Wiltshire, when snow lies about in the ditches, and does not disappear, that "'tis waiting for more;" and it truth in does betoken a cold atmosphere, and more snow very often supervenes. Then February is known all over Wiltshire as "February fill ditch," alluding to the seasonable supplies of water which should fill the ponds during that month, otherwise a scarcity of drink for the cattle during summer would be dreaded; and so our people have the proverb—

February fill the dyke,
Either with the black or white,

(meaning, either with rain or snow). In March we have, in addition to the saying of world-wide renown that "a peck of dust is worth a King's ransom," the less known proverb,

A dry March never begs its bread.

Of the following month—

An April flood
Carries away the frog and his brood.

And for the excellence of drought, there is a saying reported by Aubrey as common all over the West of England, "that a dry yeare never does cause a dearth;" a maxim which, I believe, would be endorsed by most practical and experienced farmers; though another

saying that "abundance depends upon having plenty of sour milk" (meaning caused by thunder-storms), would not, I apprehend, be so readily allowed. Amongst other traditional sayings about the seasons which I have heard commonly quoted is one which I have now for many years verified, and scarcely ever known incorrect, and that is that "There's always one fine week in February," a Wiltshire saying which I commend to the attention of all observers. There is also another about the precedence in putting forth their respective leaves on the part of the Oak and Ash trees, as a prognostic of the heat or wetness of the ensuing summer, whose accuracy I cannot say I have so successfully tested, though it may possibly prove to be generally correct—

Ash before Oak, there'll be a smoke :
Oak before Ash, there'll be a splash.

And there is another, commending the advantages of a high wind in the autumn, which runs thus—

A good October, and a good blast,
To blow the hog Acorn and mast.

Then we have a very common tradition in this country, that when the bushes are loaded with berries, a hard winter may be expected. This is a very beautiful opinion, for it betokens a lively faith in the Providence which prepares food for the birds in their time of need. It is well-known too, in Scotland, where they have the proverb, which might well be taken for genuine Wiltshire—

A Haw year
Is a snaw year.

But having said this much, and called attention to the very beautiful theory it implies, I am bound to add that no augury must be drawn from it, as it rather betokens a fruitful summer just passed than any severity of weather to be expected.

Weather Fallacies.

I now come to speak of certain popular weather fallacies, which, notwithstanding their general weather wisdom, beset our Wiltshire rustics, as well as others of more advanced education. And the first point in this respect I would mention, is the common, though wholly groundless, belief that the moon has any influence on the weather. It is, in spite of all demonstration to the contrary, and without the slightest ground for such assertion, continually declared that a change of weather may be looked for when the next change of the moon occurs. This may, perhaps, be pardonable in "Moonrakers;" but in the cause of truth, I must boldly and unhesitatingly declare that the moon has not, and cannot have, the smallest effect on the weather. But, as this popular delusion has become so engraved in the hearts of many that, notwithstanding the absence of all argument or reason in favour of it, numbers of people of all ranks and classes still cling to it, it may be worth while to mention that, with a view to allay such popular delusions, though without, of course, for a moment themselves sharing in them, some of the *savants* of France and others of Germany instituted a long series of careful investigations; the former continued twenty years at the Paris Observatory, the latter during twenty-five years at Vienna. Both of these diligently carried on the most rigorous examination of changes of weather in connection with the lunar phases; but the declared result of their accurately-kept tables showed that there was no connection between them; and, in short, when theory was set aside, and the matter accurately tested by many thousand facts during a considerable period of time, it was definitely pronounced that "no correspondence whatever existed between the changes of the moon and those of the weather, such as were popularly supposed." The stock argument (if argument it can be called) of those who uphold the moon's influence on the weather, is that the moon does undoubtedly attract the waters of the sea; but because she causes the tides, which is demonstrable, therefore that she must needs influence the weather, which is by no means a parallel case, and for which there is no show of reason, I cannot conceive to be a fair inference. Perhaps it may be generally felt (as a leading gentleman in this county once said to me in speaking of this subject), "I don't pretend to argue the point or give any reasons for it; I simply say I must continue to hold it, because if you take away the moon as my guide to a change of weather, I have nothing else to fall back upon;" or as another eager advocate for the lunar influence (though himself by no means a lunatic) remarked to me, "I don't say that the weather alters exactly on the day of the moon's changes, but you will find it does so within three days before or after the change of moon; a proposition with which I most cordially agreed, seeing that the moon changes once in seven days, and the three days before and three days after completely occupied the whole week; so after this fashion it would be strange, indeed, if the weather did not change within that prolonged period. There is a very curious old Wiltshire prejudice against a new moon occurring on a Saturday, which, if not common in the county now, prevailed not many years since, but the origin of which,

and the meaning of which, I am at a loss to conjecture. It is handed down in the following proverb:—

A Saturday's moon,
If it comes once in seven years,
Comes once too soon.

Equally unfounded, though more easily accounted for, is the notion which prevails among our people that the weather on Friday differs from that of all other days. The saying is—

To every other day in the week
Friday is not alike.

A somewhat obscurely-worded sentiment, but doubtless it originates in the same principle which causes sailors to dread putting out to sea on a Friday, viz., the custom once religiously observed of keeping Friday as a weekly fast. Leaving now the moon for a while, I may class amongst common weather fallacies the very popular notion that wet or fine weather on certain days portend continuance of such, or indeed, any special weather, as, indeed, the famous naturalist, John Ray, 200 years ago, wrote to good old credulous John Aubrey—"I reject, as superstitious, old prognostics from the weather on particular days." This remark was called forth by Aubrey having written, "In South Wiltshire the constant observation is, that if droppes doe hang upon the hedge on Candlemas Day, that it will be a good pease year;" and then he added his own opinion—"this is generally agreed to be a matter of fact. The reason perhaps may be that there rise certain unctuous vapours which may cause that fertility." I fancy, however, that we shall be more inclined to agree with honest John Ray. Few, however, are so matter-of-fact as to pay no heed to the weather on St. Swithun's day (July 15), for all know the proverb couched in a variety of words—

Saint Swithun's day if thou dost rain,
Forty days it will remain;
Saint Swithun's day, if thou be fair,
Forty days 'twill rain nae mair.

—a proverb which has its counterpart across the Channel, in the feast of St. Medard (June 8)—

S'il pleut le jour de Saint Medard,
Il pleut quarante jours plus tard.

If St. Swithun, however, is the patron of rain, St. Bartholomew is that of fine weather, and in some places is thought to counteract and displace him, for the proverb runs:—

All the tears Saint Swithun can cry
Saint Bartlemy's mantle wipes dry.

Let it, however, in common justice, be observed, that St. Bartholomew's Day (August 24) does not occur until the expiration of the forty days following St. Swithun (July 15). St. Michael's Day was also in old time, if not now, in Wiltshire, as it certainly is to this day in Sweden, a festival from which many prognostics of the ensuing season might be drawn; thus, if a north or east wind should chance to blow on that day, the following winter will be very severe; if the day should chance to be fine, the next year would be dry; but if the day should be wet, the year ensuing would be mild but damp. And, again, on New Year's Eve very anxious were the inquiries as to the direction of the wind, as from that token the weather of the entire coming year might be foreknown. The Festival of the Conversion of St. Paul (Jan. 25) was another day from which accurate prognostics of coming seasons might be framed, and not only of the seasons, but even of the welfare of the nation. The rhymes run thus—

If St. Paul's daie be faire and clear,
It doth betide a happy yeare;
But if perchance it then should raine,
It will make deare all kinds of graine;
And if the clouds make dark the skie,
Then neate and fowls this yeare shall die;
If blustering winds doe blowe aloft,
Then war shall vex the realm full oft.

But the Feast of Purification (Feb. 2) was perhaps the most noted, as a day by which to foretell the coming weather. This is embodied in the following well-known monkish legend, to the effect that a bright sun on the Feast of Purification betokens more frost after than before that festival:—

Si Sol splendescat Maria Purificante,
Major erit glacies post festum quam fuit ante.

—a proverb which has found its way into English:—

If Candlemas day be fair and bright,
Winter will have another flight;
But if Candlemas day be clouds and rain,
Winter is gone, and will not come again.

I need scarcely say that these are all popular delusions, founded on no reliable basis, though doubtless they do occasionally, however unfrequently, by accident come true; and then they attract unmerited attention, and are held up to admiring disciples as infallible weather guides. One thing, however, seems quite certain,

and that is, that if our observations are recorded through a long period of time, there will be found to be a balance of averages, both as regards heat and cold, and wet and dry weather; and in short, the general average through the whole period will be found to be maintained. So true is another Wiltshire proverb,

No one so surely pays his debt,
As wet to dry, and dry to wet;

or, as they have it in Scotland—

Lang foul, lang fair.

Not so accurate, I think, is another, though it is the exclusive property of this county, and was certainly implicitly believed in by our ancestors:—

When the hen doth moult before the cock,
The winter will be as hard as a rock;
But if the cock moult before the hen,
The winter will not wet your shoe seams.

—a proverb as poor in rhyme as in reason, though doubtless to be honoured for its antiquity, as also because it belongs to Wiltshire. There is also another saying, current in this county as elsewhere, to the effect “that a green Christmas makes a fat churchyard.” This I believe to be wholly a mistake, and that, on the contrary, the milder the Christmas the more healthy for the human race, as was indeed triumphantly proved by the return of the Registrar-general last winter. But to show the pertinacity, and I may say the unreasoning tenacity, with which the Wiltshire labourer will cling to any old saying handed down to him from his fathers, I was opposing the above proverb, which an old man quoted to me, at the beginning of 1854, and expressing my disbelief in it though not at all to his conviction; and in the summer I recalled to his recollection the same proverb, remarking that we had had unusually few deaths in the parish that year, to which he replied, “Wait a bit, sir; the year hasn’t come to an end yet.” But before the end of the year, after the battles of Alma and Inkerman had taken place, he came to me with triumph in his face, and said, “I told you, sir, the proverb would come true; the green Christmas last year has made a fat churchyard, for you see how many poor fellows have been killed in the Crimea!” After this nothing more was to be said; with the *rationale* of the proverb he had nothing to do; it had come true, and that was all that concerned him, and he is now a firmer believer than ever in that ancient tradition. And now let me say a word about almanacs which pretend to foretell the weather. It is perfectly marvellous how gullible is John Bull, eager to swallow any prognostics, be they never so unreliable, if only their authors are bold enough to be decisive in their predictions; and when, in the year 1838, by a fortuitous coincidence, an adroit Hibernian (as he has been happily styled), named Patrick Murphy, accurately foretold the coldest day of the season (which, from the law of chances, must occur occasionally within a great number of conjectures), the rage for weather almanacs rose to its height; the wildest predictions were hazarded, and though their failures were generally manifested, nothing could convince the determined believer; and I myself knew of a case where an agriculturist on a small scale, with more credulity than wisdom, wrote to the editor of the almanac to which he pinned his faith, and entreated him to name the most fortunate day for wheat-sowing. In justice to Wiltshire, let me hasten to add that this man was a native and inhabitant of Somersetshire. I suppose, too, it is allowed to presume there is a large amount of Boeotian dulness to be found in more western counties, as the famous Lord Thurlow once remarked, after holding an assize at Bodwin, in Cornwall, “that the farther west he went, he was more and more convinced that the wise men came from the east.” Now let me, in conclusion, assure the inhabitants of Wiltshire that the almanac-makers know nothing about it, and that the time is not yet come when—

Careful observers might foretell the hour
By sure prognostics when to dread a shower.

If they rely on the almanac-makers, or the moon, and leave their umbrellas at home in consequence, they will infallibly be drenched, as they deserve to be; whereas, if they listen to the experience of the labourer or the shepherd—still better, if they use their own eyes and judgment, and observe the sky, and the clouds, and the wind, not forgetting the plain lessons read to them by many branches of the animal world in this particular—they will rarely be led astray. The signs to be derived from the animal world are very numerous and very reliable, and are much observed amongst our people in consequence. As examples of the most common in this county, they will tell you that seldom indeed will a wet day be found to follow, when in the morning cows are seen lying down in their pastures; still more seldom when rooks are noticed high in the air, or swallows are seen at a great height hawking after flies; but rarest of all when three white butterflies are seen together in the garden or field; the latter is a sure sign of a fine day, which I have hardly ever known to

fail. They will tell you, on the other hand, that when the distant downs look near; or the common plover or peewit, which frequents our downs in such numbers, becomes restless; or the bees hurry home, and none leave the hive; or partridges grow wild; or seagulls make their appearance so far inland; or pigs carry straw in their mouths; or insects fly low; rain is at hand. These are but samples of many similar instances of unfailing instinct in regard to weather, which every student of Nature admires in the various branches of the animal kingdom. Perhaps I may return to this part of the question another day. I will conclude now with the clever lines of Dr. Jenner, which sum up the matter very accurately:—

The hollow winds begin to blow,
The clouds look black, the glass is low,
The soot falls down, the spaniels creep,
And spiders from their cobwebs creep;
Last night the sun went pale to bed,
The moon in halos hid her head
The boding shepherd heaves a sigh,
For see! a rainbow spans the sky;
The walls are damp, the ditches smell,
Closed is the pink-eyed Pimpernel;
The squalid toads at dusk are seen
Slowly crawling o’er the green;
Loud quack the ducks, the peacocks cry,
The distant hills are looking nigh;
Hark, how the chairs and tables crack,
Old Betty’s joints are on the rack;
And see yon rooks, how odd their flight,
They imitate the gliding kite,
Or seem precipitate to fall,
As if they felt the piercing ball;
How restless are the snorting swine,
The busy flies disturb the kine;
Low o’er the grass the swallow wings,
The cricket, too, how sharp she sings;
Puss on the hearth with velvet paws
Sits wiping o’er her whiskered jaws;
The wind, unsteady, veers around,
Or, settling, in the south is found;
The whirling wind the dust obeys,
And o’er the rapid eddy plays;
The leech disturbed is newly risen
Quite to the summit of his prison;
“’Twill surely rain I see, with sorrow,
Our jaunt must be put off to morrow.”

Changes in the Vegetation of South Africa.—Professor Dyer read a paper by Dr. Shaw, of the Cape, “On some of the Changes going on in the South African Vegetation through the Introduction of the Merino Sheep.” The author commenced by referring to the fact that civilisation and merino sheep had introduced one obnoxious plant, the *Xanthium spinosum*, into the sheep-walks of South Africa. Its fruit getting into the wool and seriously injuring its value, the Government had legislated for its compulsory destruction. In the Orange River Free State, where there was no legislation on the weed until lately, wool had become so filled that its value was depreciated nearly 50 per cent. But sheep in connection with overstocking of farms in the inland districts of the Cape were doing very serious injury directly by eating down the better and more agreeable plants, giving range to poisonous and bitter ones, and even so changing the climate as to make the country suited to the plants of the neighbouring regions, which march into the sheep-walks to aid the sheep in thrusting out and extirpating the indigenous flora. After a sketch of the distribution of plants in South Africa, the author went on to particularise the character of the prairie-like midlands of the Cape, with their luxuriant Grass and vegetation. Since sheep had been introduced, the Grass had fast disappeared, the ground, by the hurried march of the sheep for food amongst the scattered bush, had become beaten and hardened, and the seasonable rains which did come were accordingly allowed to run off the surface without soaking into the ground to the extent that was formerly the case. The country was thus drying up, the fountains becoming smaller and smaller, and the prospect was clear that the midland regions would turn into a semi-desert. The author further referred to the increase of poisonous and bitter herbage. It was dangerous to have stock in many farms which formerly were free from any injurious herbs. Long stretches of the colony were abundantly occupied by *Melica*, which were eaten by the oxen, and caused intoxication, to the serious hindrance of transport.

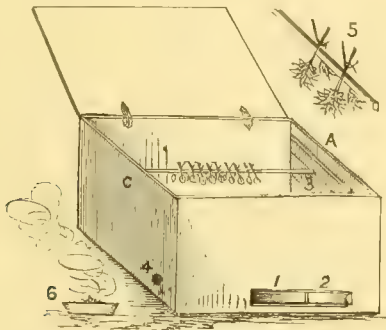
Manufacture of Jute.—Jute is principally manufactured at Dundee, where there are fifty-nine mills, ranging from four to eight stories high. The largest mill employs 5,000 hands, and works up into fabrics 999,000 pounds of raw jute per week.

THE GARDEN IN THE HOUSE.

DRYING FLOWERS IN THEIR NATURAL COLOURS.

(SMOKING WITH BRIMSTONE.)

In a recent number (see p. 242) I communicated some of my experience in drying flowers in their natural colours, but omitted to mention, as very good flowers for drying in sand, Verbenas (red and blue), Zinnia, Gaillardia, Senecio, Sanvitalia, Phlox, Tagetes, &c. I now proceed to describe the process of smoking flowers with brimstone, which is a very good, simple, and cheap way of drying flowers, especially Asters, Roses, Fuchsias (single ones), Spiræas (red-flowered kinds, such as *callosa*, *Douglasii*, &c.), *Ranunculus*, *Delphiniums*, *Cytisus*, &c. The Roses ought to be quite open, but of course not too fully blown. The first thing necessary is to procure a chest suitable in size to the quantity of flowers intended to be dried. I find the best size for general use is one about 3 or 4 feet square. The size, however, makes no difference, as one will do if only 2 feet square. In the under part of one side of the chest there should be a small opening (1), to be closed by a bar (2), through which the basin containing brimstone (6) must be put into the chest. This opening must be covered inside with perforated tin, in order to prevent those flowers from spoiling which hang immediately over the basin. The chest should be air-tight, and, in order to render it so, paper the inside thoroughly. When the chest is ready for use, nail small laths (A 3) on two opposite sides of the interior, at a distance of about 6 inches apart, upon which lay thin round sticks, upon which you can arrange the flowers (C). Care



A Box for Drying Flowers.

should be taken, however, that the flowers on the sticks, as also the sticks themselves, are not too close together, or the vapour will not circulate freely through the vacant space around the flowers. The best way to hang the flowers is to tie two of them together by the ends of their stalks with a piece of mat or thread, and afterwards place them upon the sticks so as to prevent them from touching each other (5). When the chest is sufficiently full of flowers, close it carefully, place a damp cloth on the sides of the lid, and some heavy stones upon the top of it, after which, take some brimstone broken into small pieces, put it in a small flat basin (6) and with a match kindle and put it through the opening (1) in the bottom of the chest and shut the bar (2). It is a good plan to make an air-hole (4) on opposite sides of the chest, which will assist the ignition of the brimstone, and which should be closed when the latter burns freely. Leave the chest undisturbed for twenty-four hours, after which time it must be opened, and if the flowers are sufficiently smoked they will appear white, if not they must be smoked again, when a little more brimstone may become necessary. When sufficiently smoked, take the flowers out carefully and hang them in a dry airy place in the shade for the purpose of drying, and in a few days or even hours they will recover their natural colours, except being only a shade paler. To give them a very bright shining colour, plunge them into a mixture of ten parts of cold water and one of good nitric acid, drain off the liquid, and hang them up again in the same way as before. Thus preserved they will keep for years. In a future number I shall speak about colouring and basting Everlasting flowers, Grasses, and Mosses.

G. WERMIG.

THE FLOWER TRADE IN NEW YORK.

THIRTY years ago the two florists of New York were at Astoria and Yorkville, that is, their glass-houses for the growth of flowers were located there, but the bouquet depôts were in New York. The writer of this was for a time bouquet maker for one of these establishments, and feels almost ashamed now when he thinks of the great want of taste displayed in the arrangement, particularly of bridal bouquets. The mode then was the one-sided style of bouquets, the superstructure of which was usually formed of *Arbor-vitæ* made into the shape of and nearly the size of a modern fan. The flowers were stemmed and drawn through this foundation, the one side only being flowers, the other the coarse ill-smelling *Arbor-vitæ*. How they were "carried" I never knew, but it must have been somewhat according to the disposition of the owner; if selfish, she would probably hold the flowery side towards her; if generous, she must have reversed it for the benefit of her friends. Then we tried the pyramidal style, but usually made a sorry job of it. It was years before any of us knew enough to place a stick in the centre to keep the bouquet straight, and hence the tendency was for it to get lop-sided if of any great size. Then, again, when a wreath or a cross was wanted, an extemporised one was made from such wooden materials as were at hand for the cross, and a hoop made of Willow served for the wreath. Nothing was then known of the artistic wire designs now used for such purposes—nor in fact for nearly twenty years later—for these wire designs have been used only for the last ten or twelve years. Thirty years ago the annual sales in New York of natural flowers made into bouquets or other designs probably did not reach £4,000. Now I doubt much if it is less than £400,000 annually. And this advance is probably in the same ratio in every large city in the Union. What is true of "cut flowers" is equally true of greenhouse, hothouse, or bedding plants. Our improved modes of packing to send by mail and by express enable us to place plants just as safely in the hands of purchasers a thousand miles away as if they got them next door. A gradual knowledge of this fact has so increased the shipping trade of plants that now some of our largest growers ship over 150 tons annually, or nearly one and a half millions of plants! The amount received for plants sold is larger than that for cut flowers, and will probably reach £600,000 annually, so that the combined flower trade of New York will, in all probability, be little short of £1,000,000.—*Hearth and Home*. [In all the other cities of the Union, flower-growing establishments are rapidly springing up, and, often where there is no nursery, properly so-called, they are to be found.]

PLANTS IN SLEEPING ROOMS.

MANY who do not object to occupying rooms day and night without any regular ventilation, or who do not object to sleeping down stairs, are persuaded that they run a risk of being asphyxiated if there is a square foot of green foliage in the room! It is important to know well the simple truth about this air-poison, but it cannot be told in one paper. The plants, however, can be exonerated, the truth about them being that they inhale carbonic acid, and that in the sunlight they are enabled to imbibe it rapidly, because in sunlight the leaves have the power to decompose that gas into its two elements, carbon and oxygen. The carbon is used to build the plant, being the chief material of its structure, as bricks are in the building of a brick wall; and the oxygen is given off into the air for countless uses, one of them being the sustenance of all animated beings, who must drink it (so to speak) every moment after their birth, perishing in a few minutes if deprived of it. The idea that a few plants in an upper chamber, with floor and doors ever so tight, can fill the room with this heavy choke-damp, up to the nostrils of the sleeper, is ridiculous. The lessons of the aquarium ought to be enough to dissipate it. Yet there are plants which give out odours that are oppressive to the senses, and a few that give off some subtle emanations that affect many persons injuriously. But nobody culls poisonous or ill-smelling plants for a bouquet, and among the great numbers of brightly-blooming, gaily-foliaged, and refreshingly-odoriferous plants, there is most ample choice to suit all tastes.—*Cultivator*.

A Simple Ornament.—A pretty mantelpiece ornament may be obtained by suspending an Acorn, by a piece of thread tied around it, within half an inch of the surface of some water contained in a vase, tumbler, or saucer, and allowing it to remain undisturbed for several weeks. It will soon burst open, and small roots will seek the water; a straight and tapering stem, with beautiful glossy green leaves will shoot upward, and presents a very pleasing appearance. Chestnut trees may be grown in the same manner, but their leaves are not as beautiful as those of the Oak. The water should be changed once a month, taking care to supply water of the same warmth; bits of charcoal added to it will prevent the water from souring. If the little leaves turn yellow, add one drop of ammonia into the utensil which holds the water, and they will renew their luxuriance.

HEAT WITHOUT COST.

THIS news seems too good to be true; but, if true, what a boon! It is all very well to talk of cool houses; they are useful in their way; but their use is limited by the severity of our climate, and more by the shortness and capriciousness of our summer. How difficult, for instance, it is to finish Grapes or other semi-tropical fruits in unheated houses this year, and how impossible to keep them after they are ripe in such autumns as that of last season. The power of applying heat should be present in every glass structure. Of course no one need apply the power unless it is wanted. But the fact is, our clumsy contrivances to render unheated houses efficient for the culture or preservation of plants have been much more expensive in the end than a moderate amount of direct heat. Coverings against coal at moderate prices, and coals would have had it. But now, with the prospect of free heat against coverings, the latter will be nowhere. True, we must provide a conductor for our heat, a hot-water pipe, stove, or flue. But these have to be purchased but once, coverings annually; and then we must reckon against the latter the broken glass or injured paint, and the constant labour. Totting these up, the sum total for two, or at most three years, would purchase a 2 or a 4-inch pipe, that would resist the cold to far better purpose than the covering. Even 1-inch pipes have been found sufficient to exclude frost from full-sized frames. And now that these pipes can be warmed for little or nothing, and in some cases at a profit, doubtless they will be generally used. Thus free heat will simply abolish our coal bills, but set much labour free for other purposes. Besides, I would lay claim in advance to a fair coal bill to be expended on more plants and hothouses for horticultural purposes. This saving we may reasonably hope to go to the advancement of horticulture and the bettering of the condition of horticulturists. But is not all this eating our chickens before they are hatched? By no means; fire-heat for horticultural purposes is every day becoming less an affair of theory, and more a matter of fact. From Dromore in Ireland, the system of lime-kiln heating is spreading throughout England and Scotland, and fresh kilns are being projected and built daily. A thousand feet of piping was recently heated under difficulties at Manchester. Since that great show other kilns have been set to work in various parts of England and Scotland. I have just heard of one near Edinburgh that heats a series of houses at different levels with the utmost ease, and to the entire satisfaction and great surprise of all concerned. Last Saturday many distinguished horticulturists met at Hatfield House to see a kiln heat 7,000 feet of 4-inch pipes, extending through a series of Vineries and other houses, and running in various directions out of doors. The kiln was 8 feet deep and 6 feet in diameter, and it is proposed to give it 3,000 more feet of 4-inch pipes to warm. There could be no question as to the power and sufficiency of the heat provided by the kiln. Mr. Cowan also purposes adding still more to the potency of his boiler by sinking it lower into the glowing heat of the lime-kiln. Your remarks last week in regard to the superior power of vertical to horizontal heat, however true of ordinary furnaces, are hardly applicable to lime-kiln heating. For here the sides of the kiln are so intensely hot that if a series of boiler rings can be introduced into the kiln itself, without interfering with the burning of the lime, there can be no question as to the heat penetrating through the iron, nor of its power to warm the water. And all this will be additional, for it may be assumed that the boiler in the kiln will in no degree check the energy of the heat sent up vertically to heat that portion that will in any case be placed right over it. Nor will an increasing heat be the only advantage. If it be found practicable to sink any or a large portion of this boiler into the kiln, then less vertical depth will be required for the effective working of this new and cheap method of heating. To appreciate the importance of this, it may be stated that the horticultural furnaces of the United Kingdom are within a few feet of the water line. In a majority of cases it is quite impossible to go down without being flooded out. By carrying more of the boiler into the kiln Mr. Cowan hopes to be able to work his system in a minimum depth of four feet. This would bring it within range of most of the hot water apparatus throughout the country. This reduction of depth would also lessen expense, and make the lime-kiln heating applicable to small or ordinary sized places as well as large ones. I found a general impression among those assembled at Hatfield, that the plan was only applicable to large establishments. Nor was this to be wondered at; the example before them was large and powerful; 7,000 feet of pipe, actually heated, with reserve force capable, possibly, of heating 3,000 more; and a cart-way down to the mouth of the kiln, an arrangement made to facilitate the making or removal of lime on a large scale. The kiln itself had probably an excess of power. This was also, as you observe, the first experiment with chalk, and it was important in such a large undertaking that the kiln, at least, should not fail

for lack of area; and, after all, I have seen stoke-holes as large, and far more costly, doing a mere tithe of the work. But it would be illogical to reason that because of the magnitude of the works at Hatfield the system is not adapted for small places. Why should not the small place have its heat free as well as the large one? The expense of the kiln need not be much more than the expense of a well-built furnace, and all beyond the kiln costs neither less nor more on Mr. Cowan's system than any other. Ah, I forgot the royalty; but this, if report speaks truth, is so low as not to deter any one from adopting the system. I only hope that it will reward Mr. Cowan sufficiently for his energy and zeal in the matter of providing cheap or free heat for horticultural uses. Less coal was used at Hatfield than at Manchester. At the latter the rate was two of limestone to one of coal; at Hatfield it was seven of chalk to three of coal. The experiment may be pronounced a splendid success. There was no special effort made to get up a telling exhibition; on the contrary, Mr. Cowan even, I believe, in opposition to the wishes of Mr. Bennett, charged the kiln the day before with twenty-four hours' material and work. The result was that, at four o'clock—the time for which the company was invited—the heat had by no means attained to its maximum. But no one could look into that glowing mass of fire and combustible gases, gaining in fierceness every moment, and have the slightest misgiving as to the potency of the heating power at command; and, for horticultural uses, such heavy charges are by no means necessary. Every eight or twelve hours will prove a rare relief to stokers, some of whom have to be on duty almost incessantly night and day attending to our present boilers. Again, the charges can be regulated to afford the most heat when it is most needed. What, for instance, could be easier than to charge at mid-day for a maximum amount of heat at midnight? Should the weather change, turn part of the heat into the waste tank above the boiler, just as an engineer turns off steam when he slackens speed. And, even should the lime-kiln fail on a sudden emergency, or not have been lighted in time, slip in some bars under the boiler and make a fire to tell at once, as in a common furnace. I do not anticipate that this last will be needed, and the possibility of doing it is merely pointed out to nervous stokers who often suffer from frost-fever, and are believers only in immediate results. Horticulturists owe a debt of gratitude to the Marquis of Salisbury and to his gardener, Mr. Bennett, for the opportunity of testing the system on so extensive a scale, while Mr. Cowan, the inventor, and Mr. Boyd, who carried out the heating arrangements, are to be congratulated on the complete success of this illustration on a large scale of heating without cost. The system seems equally well adapted for the heating of manufactories and public buildings, as for horticultural purposes, and is likely to be extensively adopted wherever sufficient depth is available, and limestone or chalk within easy distance. I do not anticipate much difficulty in commanding a market for the lime made. The next experiment needed is to test the cost of conveying limestone or chalk to the kiln, and this is about being worked out in Glasgow, where a kiln is being erected to be fed with limestone from Ireland.

D. T. FISHER.

WILD BIRDS' PROTECTION ACT.

(SUMMARY OF SELECT COMMITTEE'S REPORT.)

It has long been considered, and will probably continue to be so, despite all pains and penalties to the contrary, so long as early Peas and fruit are to be found in Covent Garden, that small birds are as deadly a foe to the market gardener as are hawks and owls, in the head-keeper's opinion, to my lord's preserves. Blackbirds, and thrushes, and tomtits have been fair game at every season of the year throughout the orchards and gardens of Great Britain, and even the song of our Laureate himself has been powerless to stay the hand of the so-called avenger. But at length a champion has arisen for them in the person of the Rev. H. B. Tristram, F.R.S., and chairman of that association, to whom is due the Act of 1872. The harm which these birds do to the market gardener at certain seasons of the year is more than counterbalanced, he asserted before the Select Committee, by the good that they have done in the early year. This is especially the case with soft-billed birds, the thrush and blackbird tribe, the wagtails and the warblers. The titmouse, indeed, "a sagacious bird," never breaks off a bud where there is not "an insect at the bottom which would have destroyed the fructification of the bud;" but the blackbird, though one grub is more to him than many buds, being more careless and eager, does occasionally make mistakes which cannot be rectified at least within that year. And it is the same with many birds now held by gamekeepers as mere vermin to be removed from off the face of their own particular spot of earth at every opportunity. As an instance, the kestrel is taken—an instance

which came before the witness's own personal observation. This bird is supposed to be especially fatal to partridges, but in the crop of one which had been recently shot for that supposed offence was found not a single partridge feather, but 178 wire-worms! Gardeners and gamekeepers (says Mr. Tristram) are ignorant people in such matters, and, seeing the harm that is being occasionally done to their ripening Strawberries, or their growing partridges, must not be expected to think, before they fetch the gun, of the good that is done them by these visitors at other times. Opinions differ greatly as to the birds that should by right be excepted from the protection of the law, and whereas some, such as eagles, owls, hawks, rooks, and even wood-pigeons, are denounced by one witness as the most fatal and most useless of vermin, the next will have nothing to say about them that is not good. Only one voice, however, is to be heard in favour of the sparrow, but that is a strong and an eloquent one, and comes from Mr. F. O. Morris, rector of Nunburnholme, in Yorkshire. With the others, this little brown bird is "a parasite on man." Not only is he harmful in himself, but he is the cause of much innocent bloodshed in others. For the vexed soul of the farmer or the gardener will not wait to discriminate between those that really do the mischief that is done, and those that merely perch on the branches hard by and warble, it must be confessed sometimes in an aggravating manner, as it were a psalm of rejoicing over the falling fruit—but lumping all small birds together into one worthless class, destroys them right and left. But Mr. Morris has a kind word even for the sparrows. They do not destroy martins, and they do destroy flies. It is calculated by Linnæus, says Mr. Morris, that the progeny of three flies would devour a dead horse almost as quickly as a lion, and the common house-fly is computed to produce in one season not less than 20,000,000 offspring. Now a sparrow has been seen, in feeding its young, to catch, within half-an-hour, no fewer than fourteen of these prolific insects on the wing, and thus reduce the number of these common pests by at least 280,000,000. After this who can say that even the sparrow has not a purpose in the world? The bullfinch, the tomtit, the whitethroat, and the starling all found before the Committee a staunch advocate in this witness, who lays the blame of more than half the mischief attributed to these little fellows on the wasps and mice, and "other real vermin," which have of late years increased in an alarming degree, owing, on the same authority, to the prevalence of the "wretched system" of the battue. It is, indeed, not contended that no harm is done by our small birds, but that, to obviate this harm, it is not necessary that indiscriminate slaughter should be waged against them all the year round. Let them, at least, breed in peace. When the Cherries and Strawberries are out, or when speculation grows rife as to the growing crops, then the gardener or the farmer must look after his own as best he can. Every man has an undoubted right to guard his own property, and if he finds that the visits of blackbirds, and thrushes, tomtits, starlings, *et id genus omne* are prejudicial to his interest, he should be at liberty to put a summary stop to those visits in the most effectual manner he is acquainted with. They would not, however, from the short yearly armistice allowed them, increase in such numbers as to render this impossible, and, in any case of peculiar aggravation, it is proposed that the aggrieved party should be entitled, on application, to recommence hostilities at once. It is not advised, in the interest of the birds themselves, that the law should be a very arbitrary one, lest the sufferers should be inclined rather to take it into their own hands. What is wanted is such an act as would secure the friendly operation of all classes—notably of market gardeners and farmers. To quote the words of Mr. Tristram, the law should be "stringent with regard to birds that are useful for human food—namely, the waders and web-footed birds; cautionary and restrictive with regard to bird-catchers, and absolutely prohibitory with regard to swallow shooting." Even more harm is done now-a-days with the nets and traps of the bird-catchers than with the gun, whether it be the gun of the tyro, who is burning powder in practice for the forthcoming "season," or of the hardened practitioner who has years of wasted acres to avenge. It is stated in evidence that in one shop in London, in the spring of 1872, there were no less than 200 robins that had been killed for their skins, and an instance is adduced of a lady who once "had the audacity to appear at a party in a dress, whereof the trimmings must have cost the lives of at least 500 of these little birds. Mr. George Bryant, bird-catcher, of Marylebone, would like to see the month of March closed even to his own trade, though he admits the improbability of many of his brother professionals being found to agree with him. Linnets and goldfinches, he says, grow scarcer every year, and he further imparts this bit of information, to which we would beg to call the attention of all epicures—he has frequently had 2s. 6d. apiece offered him by poulterers for bramble-finches, to be sold in their shops as ortolans, in seasons when the latter have been scarce. Mr. Bryant's ideas of the restrictions to be imposed on

the bird-catchers are, as is but natural, more moderate than are those of others. Mr. Tristram, for instance, would have a law prohibiting bird-trapping between the 1st of April and the 1st of August, on or within 50 yards of any highway, while swallows and martins, "of great value in the destruction of gnats and mosquitoes," should be sacred throughout the entire year. In conclusion, the following are the resolutions to which the committee, "having considered the matters to them referred," have arrived:—"1. That the protection of certain wild birds named in the schedule of the Wild Birds' Protection Act of 1872 be continued. 2. That all other wild birds be protected from the 15th of March to the 1st of August, provided that owners or occupiers of lands, and persons deputed by them, have permission to destroy such birds on lands owned or occupied by them. 3. That one of Her Majesty's principal Secretaries of State should be empowered to except, in any particular district, any bird from the protection afforded, either by the Act of 1872 or by the proposed Act, if he think necessary to do so. 4. That for the sake of giving better protection to the swimmers and waders, no dead bird, if such bird is mentioned in the Sea-fowl Preservation Act or the Wild Birds' Protection Act of 1872, be allowed, from the 15th of March to the 1st of August, to be bought and sold, or exposed for sale, whether taken in this country or said to be imported from any other country. 5. That any violation of this proposed Act or of the Wild Birds' Protection Act of 1872, be punished by the payment of costs alone for the first offence, and the payment of costs, and a fine not exceeding 5s. for every offence after the first."

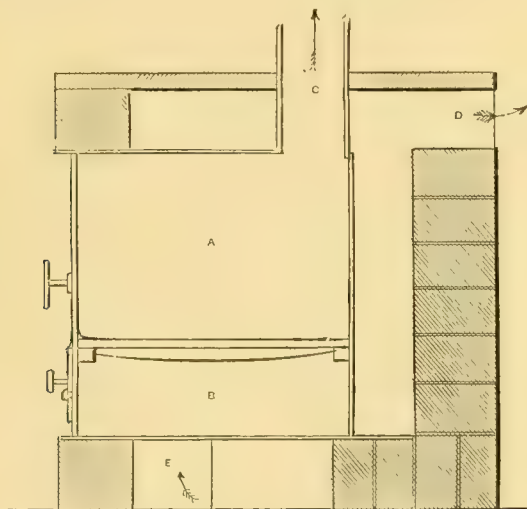
NEW PARK AT DEPTFORD.

THE new park near Deptford is nearly completed, and it will be a great boon to the residents. Many others are also likely to visit it, from its associations with the memory of the learned and accomplished John Evelyn, whose manor of Sayes Court is comprised in the park. In spite of the troubled times in which he lived—those of the Stuarts, the Commonwealth, and the restored Monarchy—and the heart-stirring events which he has recorded in his diary, we find constant notices of his home at Sayes Court. He remarks in the beginning of the year 1652-3 that he then "began to set out the oval garden, which was before a rude orchard, and all the rest one entire field of 100 acres, without an hedge, except that hither Holly hedge, joining to the back of the mount-walk." A few days afterwards we find this entry: "I planted the orchard at Sayes Court; new moon, wind west." In this quiet abode he lived honoured and respected, although in the King's time allowing "orthodox sequestered ministers" to conduct divine service in his library, and during the Protectorate known to be a devoted Royalist. He improved his estate by cultivation, and "planted all the out-limits of the garden and long walks with Holly." He wrote with enthusiasm of this Holly, in his "Sylva." "Is there," he asks, "under heaven a more glorious and refreshing object of the kind than an impregnable hedge of 160 feet in length, 7 feet high, and 5 feet in diameter, which I show in my poor garden, at any time of the year, glittering with its arm'd and vernish'd leaves? the taller standards at orderly distances blushing with their natural corall. It mocks at the rudest assaults of the weather, beasts, or hedge breaker." Mr. Evelyn loved his trees and shrubs; and we read of his leaving London, where he was wintering, to see how a hard frost had dealt with them. He found "the Oranges and Myrtles very sick, the Rosemary and Laurels dead to all appearance, but the Cypress likely to endure it." Under his tender care his garden thrived space. "A lovely noble ground he hath indeed," was the testimony of Pepys; but all its beauty could not save it from the most barbarous usage at the hands of that semi-savage, Peter the Great. In an evil hour Evelyn let Sayes Court for his residence, while he, "having a mind to see the building of ships," was following the trade at Deptford. His assaults proved ruder than those of any "weather, beast, or hedge-breaker," and he found great amusement in demolishing the stately hedges by driving a wheelbarrow through them. Such being his idea of fun and pleasure, we cannot wonder that the habits of himself and of his suite were anything but suitable for tenants of the gentle and elegant Evelyn, whose feelings we may imagine when he received from a servant left at the Court the information that "there is a house full of people, and right nasty." So much injury was done during the three months the place was occupied by the Royal resident, that Mr. Evelyn succeeded in obtaining damages to the amount of £150. The Deptford shipwrights of the present day are more civilised than Czar Peter was; and trees, shrubs, and Holly fences can be trusted within their reach. It is often difficult to select a name for a new undertaking; but, bearing in mind the associations of the place, could a more fitting one be found for this valuable gift to Deptford than that of "Evelyn Park"?—*Globe*.

GARDEN STRUCTURES.

A SUCCESSFUL INSTANCE OF HOT-AIR HEATING.

Nothing has a tendency to check the gardening operations and aspirations of the amateur so much as the cost of heating the structures in which he has to winter his plants. And no wonder, for what with patent boilers, patent joints, patent bars, and patent pipes, and the present price of iron and labour, to say nothing of that of coals, the £ s. d. question meets him at every turn. If, as is not rarely the case, in large places the fee simple of the garden is permanently submerged by the hot-water apparatus inflicted on it, the boiler and pipes of the amateur's two or three-light pits or small greenhouse swallow up funds which he would, doubtless, more gladly see expended in increasing his collection, and if, in this note, I can put my fellow amateurs into the way of avoiding this sinking fund, I shall not have penned it in vain. Now, I am an amateur of a good deal more than half-a-century's standing, when the brick flue was the only heating apparatus, and well remember the sensation produced by Tredgold's paper on heating by hot-water, and by the steam heating of those kind-hearted men, Messrs. Loddiges, whose nursery was then the wonder of the gardening world. I soon made myself thoroughly master of the theory of heating by hot water, and have tried it in most of

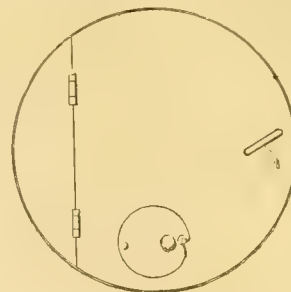


Section of oven and air chamber.

A. Oven. B. Ashpit. C. Chimney pipe. D. Exit for heated air. E. Entrance for cold air. Shaded, brickwork; unshaded, air chamber.

its shapes from the level system of Tredgold, through the syphon of Kewley, and the open troughs of Rendle, up to what might be called the "red-hot water" of Perkins, and could tell you many a tale of the crass ignorance of the hot-water doctors I have met with. That, however, is not my object. The repeal of the duties on glass in 1845 gave a wonderful stimulus to the erection of plant houses, both large and small, and the old wooden frame had especially to make way for the more substantial brick pit. In 1847 the "Polmaise" mode of heating made a good deal of noise, and, on visiting a few places where friends had adopted it, I at once saw that it was the very thing for heating small isolated pits and such like, which were not easily attached to an existing hot-water apparatus. I was then about to put up a couple of pits for wintering scarlet Geraniums in, to be each 12 feet 6 inches long, 6 feet wide, with walls 3 feet high, and thinking over what I had seen of "Polmaise," I planned and had made under my directions, by some tenants of my own, who were accustomed to turn out neat iron castings,* the oven which I had hit upon, and which has served me for twenty-six years without any repair, until last year, when the rough carelessness of a gardener snapped off a portion of the door, that had to be replaced. My cogitations took this shape—Air, like water, is

a fluid, and the coldest portion being the heaviest must be the lowest stratum, and if drawn to the heating body it will absorb heat and rise to the highest level, to be again cooled, and so establish a constant circulation of heat as in hot water, and accomplish the object I had in view. I assumed that a round shape was best calculated to treat the circulating air most uniformly, and so directed the founders to cast me a



Oven in front.

round oven—I (mean the ordinary baking oven of our kitchens)—18 inches diameter, and of the same length, but, instead of the usual ledges for carrying the shelves inside it, to cast a pair 6 inches from the bottom to carry a grate of fire bars; to make the door open to one side instead of downwards, and at the further end of the oven to leave an opening of 4 inches diameter, casting on it a short socket to receive the chimney pipe. In the door, which is fastened in the usual way, a hole 2 inches in diameter is cast, so that it is 1 inch below the grate inside, and forms the opening for the supply of air to the fire; a moving valve covers the opening, having a screw at the lower side by which the supply of air is regulated. This can be done to a hair's breadth. The chimney in such a case consists of a piece of cast-iron pipe of the requisite diameter, 3 feet long, and is merely set in the socket-pipe on the oven. This completes the apparatus, and cost me something like 30s. Next, as to the setting—the object being to compel the heated air to circulate uniformly in the pit or greenhouse, it is necessary to enclose the oven in a chamber by building walls of 4½-inch brickwork, so as to leave an open space of 3 or 4 inches in width on all sides of the oven except at the door end, where the wall, with a brick or two on edge underneath, supports the oven itself, the whole chamber being covered with a flagstone. At the top, and also at the bottom of the chamber, a hole about 5 inches square is left in the brickwork, both opening into the pit, &c., to be heated to allow the heated air to escape and the cold air to enter. To ensure the return of the coldest air to be re-heated, the supply is drawn from the floor of the end of the pit or greenhouse most distant from the oven, and is very effectually conveyed through a line of 5-inch ordinary draining tiles, either placed on or underneath the floor, terminating in the hole left in the brickwork at the bottom of the heated chamber, and there made close with a little mortar.* The entrance of the heated air needs no attention, but may be modified to meet any special purpose.

Of course, the position of the chamber must be determined by the pit or pits, &c., to be heated, and it may be built either within or outside to suit each individual case. Where economy of heat is an object, it is best inside, and, being only a cube of some 2 feet 9 inches, is readily concealed by a plant stage, if so wished, though in such cases an elbow pipe is requisite to convey the smoke to the chimney-pipe outside. Where two pits are to be heated by one oven, the chamber is best built at one end, and between them and the air space must be divided by a brick on edge wall at the further end and a pipe of iron along the top with a damper in it to divert the whole current of heated air, if so wished, into either pit. In the case of a greenhouse, the chamber is best placed at the back or end wall with the oven door opening into the back shed, or a small wooden one to keep the fuel dry can be readily put up. In the case of a propagating pit, bottom-heat is very readily and very steadily secured, and the atmosphere also warmed by placing the oven in a chamber running the whole length of the bed

* Heppell Brothers, Gateshead.

* This plan has since been adopted in the "Patent Gill Stoves."

mine is 15 feet by 3 feet, covered by thin flags and having 3 inches of clean sand to receive the cuttings. The opening to admit the warm air to the house is at the farthest end, and 6 inches below the covering flags, and that for return of the cooled air at the floor level next the oven, thus reversing the ordinary plan. By this means a stratum of warm air 6 inches in depth is constantly secured to the bed above, and is most effective. A 15-inch oven I find fully sufficient in my case.

FUEL.—The waste cinders from an ordinary house fire are by far the best fuel; but broken gas coke and small coals do very well, and, if the supply of air is carefully regulated, the fire will last 12 or 24 or even 48 hours, though few amateurs will willingly subject their plants to the risks of so long an absence.

An oven of the above dimensions will be found ample heating power for 1,000 cubic feet of air in the most severe weather, and in usual winters 1,800 cubic feet are safely warmed by it.

Burghfield Grange, Gateshead.

GEORGE WAILES.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Conservatories.—These should be put in readiness for winter: the glass should be washed clean and mended, and the ventilators put in good working condition and made to fit closely—a precaution which tends to exclude north and east winds and to economise fire-heat. Ventilate freely and long every fine day, and permit the temperature to fall to 37° before using any fire-heat, unless some of the occupants are somewhat tender, when it would not be advisable that the thermometer should sink lower than 40°. Have all staging cleanly washed, also the pots containing the plants, and make a thorough re-arrangement, for all plants to be wintered in the conservatory should now be placed therein, and the introduction of blooming plants should be a matter of consideration, every few days taking in such as have come into bloom in the pits and greenhouses, and removing those that have done flowering. In order to admit as much light as possible, prune in most of the climbers; but such as *Lapagerias*, *Hoya carnosae*, and a few others, should not be interfered with. The following are a few of the flowering and ornamental plants which should now be in full beauty in the conservatory—viz., *Chrysanthemums* of different sorts, Chinese *Primulas*, Persian *Cyclamens*, *Mignonette*, *Violets*, *Begonia Weltoniensis* and a few late hybrids, *Bouvardias*, *Nerines*, late *Gladioli* that were lifted and potted as they were coming into bloom, tree *Carnations*, *Erica gracilis*, *Plumbago capensis*, *Fuchsias*, *Cassia floribunda*, *Vallota purpurea*, forced *Camellias*, zonal *Pelargoniums*, *Tropeolum Lobbianum*, *Eucodonia nagellioides*, *Oleanders*, *Hedera fuchsoides*, *Lasiandra macrantha*, *Cypripedium insigne*, *Odontoglossum grande*, and a few other cool *Orchids*, *Solanum Capsicastrum*, *Skimmias*, *Ardisias*, and others.

Soft-wooded Greenhouse Plants.—The earliest *Cinerarias* will now be coming into flower, therefore keep them on a cool airy shelf in a well-lighted house. Any of the succession plants requiring it, should be potted at once, and kept in frames or pits near the glass, where they will be quite cool and freely ventilated. As regards herbaceous *Calceolarias*, pick off every leaf that is damping off, or portion of a leaf in that condition, as soon as detected. Chinese *Primulas* should now be fully established, and kept in open airy frames shut up against frost, with the exception of a few of the most advanced, which may be placed on a shelf in a warm part of the greenhouse or conservatory, and watered with weak manure water when the flowers begin to open. *Chrysanthemums* must now be brought indoors, and they may at once be arranged in the conservatory, the tall ones amongst the *Camellias* and similar evergreens, and the dwarf ones should be set on stages. Give them weak manure-water until they open their flowers, when pure water only should be used. Remove suckers from their base; but permit a few to remain on the strong-growing kinds, for purposes of propagation next month. February is early enough for propagating *Pompones*, but the sooner cuttings are obtained and planted the stronger will be the plants and the more heavily laden will they be with flowers. *Cyclamens* to bloom early should have been potted early and kept in a genial temperature close to the glass, but the main batch should have been kept in cool frames facing the north after having been potted, and, as they commenced to grow, placed in light frames or houses free from cold draughts but well ventilated, and the plants should be sprinkled overhead with the syringe every morning, and twice on fine sunny days. The finest *Cyclamens* are grown in houses exclusively devoted to them, light and airy, and ventilated a little day and night, a little fire-heat being maintained at the same time to counteract damp and to keep the temperature from falling under 43°. Sow *Cyclamen* seeds, if not already done,

at once, in light soil in pots or pans, covering them with a pane of glass, and placing them on a shelf near the glass in an intermediate temperature until they vegetate, when, as soon as they can be conveniently laid hold of, prick them off thickly into other pots, and, as soon as their leaves begin to meet, pot them singly in thumb pots. *Cyclamens* sown in September and grown on moderately, may be induced to bear in fifteen months afterwards from three to six dozen fine flowers all expanded at once, and in twelve months more some of them will bear as many as 200 flowers. Introduce some of the most advanced *Mignonette* in pots into warm quarters for a time, in order to cause it to flower more speedily; but keep the rest in cool frames, protected from frost. Attend regularly to the training of *Tropeolum tricolor* and *Jarratii*, which should now be comfortably situated in a warm greenhouse, but use no stimulant until the plants have made good progress. After lifting *Solanums* from the open ground, keep them quite cool in shady frames for a time. Introduce some of the established ones, also some *Aucubas*, into heat, to hasten the ripening of their berries. Early-potted *Roman* and *Dutch Hyacinths*, and other bulbous plants that have made a little growth, should be removed from the plunging material with which they have been covered, and placed in a moderately shady corner for a few days, so that the growth made in the dark may become green and hardy; afterwards place them in a brisk temperature to hasten their flowering period. Pot any bulbs that are required, and plunge the pots out of doors, in a shed, or anywhere where the roots will be cool and sheltered from rain—in ashes, sand, or cocoa-nut fibre—at the same time covering the whole with a layer 2 inches in depth. Keep *Bouvardias* in a growing temperature, and pot such *Carnations* and *Picotees* from last summer's layers as are required for indoor decoration. Lift *Violets*, and plant them in light rich soil in frames, where they will bloom freely, and pot a few for conservatory use. Procure some good crowns of *Lily* of the Valley and *Spiraea japonica* that were not forced last year; pot them in comparatively small pots, and treat them in the same way as *Hyacinths* and *Narcissi*. *Auriculas* and *Polyanthuses* should now be looked over and placed in an airy dry position under cover. All soft-wooded greenhouse plants are now liable to damp; the atmosphere of the house, therefore, which they occupy must be kept as dry as possible, and well ventilated. In wet weather a little fire-heat, with ventilation at the same time, may also be used. Pick off every damping leaf or portion of leaf; and should a shoot be damped through, cut it off under the diseased spot, and rub the incision with powdered charcoal. Allow no fallen leaves to remain lying about the house, as they are sure to generate damp, and will certainly communicate it to any plant coming in contact with them.

Hard-wooded Greenhouse Plants.—All hard-wooded plants that were placed out-of-doors during the last few months, should now be brought inside and arranged for the winter. The pots should have been washed, and such plants as were so pot-bound as to be likely to start weakly in spring, should have been shifted, giving them a small shift and potting them very firmly. Tie in all straggling shoots, and dust over, with flowers of sulphur, all plants affected with mildew, as *Heaths* often are. Keep the latter far enough apart to prevent them from touching one another, in light and airy houses that ought to be ventilated on the opposite side to that on which the wind is blowing. Maintain a dry atmosphere and use all possible means for the suppression of insects.

Stoves.—Entirely dispense with shading, maintain a dry atmosphere, and give evergreen plants a rather scanty supply of water; growing plants, however, must be moderately supplied with moisture; cut back, and tie up all climbing and rambling subjects likely to become interwoven with their associates. The following plants may be placed on their sides to rest under stages, or on back shelves at the coolest end of the stove, viz.:—*Caladiums*, *Gloxinias*, *Achimenes*, *Kämpferia*, *Roscoeae*, *Amorphophallus Rivieri*, *nivosus*, and others, *Godwinia gigas*, *Alocasia Jenningsii* and *Marshallii*, *Curcumas*, *Sauromatum asperum*, *Gloriosas*, and (in the greenhouse) *Lilies* and hybrid *Begonias*, *Cannas*, *Daturas*, *Erythras*, and *Fuchsias*. Start lately rested plants of *Eucharis amazonica*, in a brisk bottom heat, to flower in winter, and keep *Poinsettias* and *Euphorbia jacquiniæflora* near the glass, and in a good growing heat.

Figs.—Get the latest crop well ripened with additional fire-heat as soon as possible, and let the warmth decline gradually after the fruit has been gathered. Keep plants that have yielded their crops cool and partially dormant, and prune away what wood is not required for next year's cropping. Make preparation for protecting trees out-of-doors, for although a slight frost does not injure them 10° proves prejudicial to the young wood. Broom makes the best protecting material for *Figs*, as it does not harbour mice, and it can be used so thinly as neither to exclude light nor air, and at the same time to prove an effectual protection against frost.

THE KITCHEN GARDEN.

BLACKLEY'S CURE FOR THE POTATO DISEASE.

As you are aware, my experiment with Potatoes in the Royal Horticultural Society's gardens at Chiswick was to prove that Potatoes, cultivated on the principle which I have successfully adopted now for four years at home, can be grown entirely free from disease. I therefore beg to furnish you, so far as I can, with the result of the trial on the society's ground. In the first place, I must remind you, however, that the sets which I planted were to be treated by the society's workmen in the usual way, that nothing was to be planted between the drills, and that I was to be present when the Potatoes were lifted. I managed to get to Chiswick on Wednesday, the 15th inst., and was surprised to find that my Potatoes had all been lifted unknown to me—and further, that a drill of Brussell's Sprouts had some considerable time ago been planted on each side of my Potatoes, the leaves of which completely met over the Potato drills. I know nothing about what the Potatoes were like when lifted after such treatment, but I was informed that there were a vast number at each root. This is the way in which the Royal Horticultural Society sets about ascertaining the value of a course of treatment which has for four years been found to be quite reliable as regards prevention of disease. I have never had a single diseased tuber during my four years' experiments at home, and this season I planted thirty-two drills of various sorts at the same time, at which those at Chiswick were planted, and a larger crop had never been dug up, and without the least symptom of disease. I think it a pity that another year, possibly quite as disastrous as this for the Potato crop, should be wasted before the people in general have had a chance of trying my plan themselves.

JAS. BLACKLEY, *Leyton.*

ROLLING A CURE FOR POTATO DISEASE.

MANY and various are the reports that have been circulated as to the cause, cure, and entire extermination of this disease, since its first appearance, now more than a quarter of a century ago, but notwithstanding all that has been done, but little advance has as yet been made, beyond what was recorded by me at the time of its outbreak. I recommended people then to choose the best early and second early varieties, of known and approved quality, to plant early on well pulverised, sweet, healthy soil, and, if possible, on land on which the Potato had not often, or had not at all previously been grown, as the surest and best safeguard against disease. One common-sense remedy was long ago recommended to those who had breadths of Potatoes ripening off, and who could not at a busy season take them up at once; and that was to roll the ground firmly—a practice which was considered to be an advantage, inasmuch as it tended to exclude the too free circulation of the atmosphere and to carry off excessive rainfall. But with rolling down Potatoes, as Mr. Begbie, of Bicton, states he did, I have no sympathy. He says: "Having read about the advantages of rolling Potato fields on the recurrence of disease, it may be worth notice that the experiment has been tried at Bicton with the most satisfactory results. Potato disease made its appearance with us on the 14th of July, when a most promising field of over three acres, then in full flower, was thoroughly rolled up, down, and across with a heavy one-horse roller, firming the ground and bruising Potato-stalks as much as possible. From careful examination it soon became evident that the plague was greatly checked, if not stamped out, no extension of it having been observed since the operation. Potatoes go on ripening with healthy foliage, a few lateral shoots only having grown out from their stems. The field under notice was planted about the middle of March in rows 2 feet 6 inches apart, and with medium-sized tubers 1 foot from each other. Early varieties are now stored, and have turned out an excellent crop, with scarcely any disease amongst them; the quality is also all that could be desired. Late sorts also promise to be an abundant crop, of good size, and with no trace of disease in them at present. The exposure is open, and the manure used consisted of well-rotted leaves from Pine-pit linings, to which were added a little bone-dust, coal and turf-ashes, wood-ashes, and soot, well mixed and sown in the drills. In a Potato plot a few yards off the field, where rolling the ground was not resorted to, Potato stalks have nearly disappeared by disease. From this statement the inference may be fairly drawn that if rolling Potatoes at the proper time—which is on the very first appearance of spot on the leaves, not days after, as that would be labour lost—if not preventive, is palliative, and I strongly recommend Potato-growers to give the practice a fair trial and publish the result." In this case the Potatoes would be in full flower, erect, and with foliage and stalks crisp and full of sap. Therefore, such a smashing and bruising of foliage and stalks, would certainly be more likely to introduce the disease than to retard its progress. Mr. Begbie, however, states that

after bruising the stalks as much as possible, on examination it soon became evident that the plague had been greatly checked, if not stamped out—query, how could that fact be so soon ascertained, when the remarks just quoted were published on the 23rd of July; in so short a time no practical proof could be obtained that the disease had been checked, much less stamped out. The fact is, the bruised stalks made abundance of lateral second growth, and the tubers so checked are putting forth a new growth in the shape of shoots, foliage, and new tubers; the value of which is pretty well known to growers and consumers of Potatoes.

JAMES BARNES.
Emmott.

THE CASE OF ALFRED CHAPMAN GLENDINNING,

On a former occasion you kindly inserted in your journal a paragraph respecting the case of Alfred Chapman Glendinning, son of the late Mr. Glendinning, of the Chiswick Nurseries, a candidate for free admission to the Earlswood Asylum, where he has been upon payment. Would it be asking too much again to remind your readers of the case? We are very anxious to gain his admission at the next election, which takes place on the 30th inst.; but the sum demanded by the Asylum for his maintenance is most difficult to meet, and his family, consisting of an invalid mother and two sisters, are quite unable to contribute anything towards it.

Little Sutton, Chiswick.

F. DANCER.

Suffocation Caused by a Stokehole.—From the *Malvern News* we learn that an under gardener in the employ of the Earl of Coventry, at Croome Court, was lately suffocated in his bed. From the evidence given at the inquest, it appears that the room in which the deceased slept was at the back of the conservatory, and adjoined the stoke-hole, and that during the night the sulphureous fumes from the fire found their way into the room and suffocated him.

The Vegetarian Society.—Among the various associations having for their object the benefit of humanity, none deserves greater credit for perseverance under adverse circumstances than this society, which held its annual *soirée* the other day at Manchester. The account given of the progress of the movement was not altogether satisfactory. The chairman observed that he was to some extent discontented with the state of the society. The work to be done was so great and important, that a number of agents ought to be set to work; but it was painful to say that they could not accomplish this because of insufficient material resources, for the society had neither sufficient funds nor coadjutors. He should like them to be rich enough to engage chemists to analyse various articles which ought to be food, and to tell what was bad in them and what ought to be cast out, and what was good in them and ought to be retained. If such a plan could be accomplished, it would, the chairman thought, do the cause of vegetarianism a great deal of good. He also suggested the establishment of vegetarian cook-shops and public vegetarian dinners.

COVENT GARDEN MARKET.

OCTOBER 24TH.

HOME supplies of both fruits and vegetables are well kept up; foreign importations, too, continue heavy, and comprise all the best varieties of Pears in season. English fruit of this kind does not keep well this season. Hothouse Grapes, both Black Hamburgs and Muscats, are quite sufficient for the demand.

Prices of Fruits.—Apples, per half-sieve, 9d. to 1s.; Chilies, per 100, 2s.; Cobs, per lb., 1s. to 1s. 9d.; Chestnuts, per bushel, 15s. to 20s.; Filberts, per lb., 1s. to 1s. 6d.; Grapes, hothouse, black, per lb., 1s. to 6s.; Muscats, 2s. to 6s.; Lemons, per 100, 8s. to 14s.; Melons, each, 2s. to 4s.; Oranges, per 100, 12s. to 24s.; Peaches, per doz., 6s. to 12s.; Pears, per doz., 1s. to 4s.; Pine-Apples, per lb., 3s. to 6s.; Tomatoes, per doz., 1s. to 2s.; Walnuts, per bushel, 8s. to 12s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 1s. 6d. to 3s.; Beans, Kidney, per half sieve, 1s. 6d. to 2s.; Beet, Red, per doz., 1s. to 2s.; Brussels Sprouts, per half-sieve, 2s. 6d.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Cole-worts, per doz. bunches, 3s.; Cucumbers, each, 6d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 3d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 2s. 6d. to 4s.; button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Potatoes, per bushel, 2s. 6d. to 4s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Salsafy, per bundle, 1s. to 1s. 6d.; Scorzonera, per bundle, 1s.; Spinach, per bushel, 3s.; Turnips, per bunch, 3d. to 6d.; Vegetable Marrows, per doz., 1s. to 2s.

From the Coal Districts.—My Lady: "I'm afraid I must give up the Pine-apple, Mr. Green. Eight shillings is really too much!"—Successful Collier: "Just put 'em up for me, then, master."—*Punch.*

THE GARDEN.

"This is an art
Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

IN THE GARDEN of the 4th instant you speak of the present uncomfortable position of the Royal Horticultural Society, and end with "something must be done." It is a melancholy fact that, even under the late council, strong as it was horticulturally, and hard-working and persevering in its attempts to forward the interests of horticulture, a large part of the great body of horticulturists throughout the country, including many of its best members, held aloof from the society, and neither thought, felt, or spoke, kindly of it. Under the new council, which came in after the Kensingtonian *coup d'état*, the horticultural division of the council was weak, and the loss of the valuable secretary, Mr. Richards, has alienated not a few of what horticultural friends the society had. There is no doubt that the society has done, and is doing, much good work at Chiswick, at the committee meetings, and at the country shows, but even the late council had almost overwhelming difficulties with which to contend. If for a moment we consider the constitution of the society this will at once be apparent. A very large proportion of the Fellows have joined the society in order that they and their children may enjoy the large open space and conservatory at South Kensington, and for these objects they pay an admission fee and an annual subscription of two or four guineas; this may seem a fair consideration, but unfortunately the South Kensington garden stands under rather peculiar circumstances. The money which bought the land came from the surplus of the 1851 Exhibition, principally consisting of the people's shillings. This land, some twenty-two acres, has become immensely valuable; it has been estimated at £300,000. Property bought from such a source, and of such value, ought to yield, in some way or other, a much larger sum than it does, to be spent on public objects; as it is, with the debenture debt (£2,000 a year), which must be paid, with rent (£2,400 a year), which ought to be paid; and with that part of the cost of Chiswick garden which goes to nursery work to beautify the South Kensington conservatory and garden, and with South Kensington rates and taxes, there is no great amount left for the great public object of spreading and helping horticulture. The late council almost concluded an arrangement with the 1851 Commissioners, by which, in consideration of the Exhibition visitors being admitted free to the gardens, the Commissioners would clear the society of the debenture charge of £2,000 a year, of the rent £2,400 a year, and give what was estimated to amount to £1,000 a year more for horticulture (a settlement with life fellows was understood). This would have enabled the society to carry on vigorously, and would have fairly utilised the land. Then the Kensingtonian compact vote turned out the council, who, as you correctly say, made "a very poor fight." You might have put it still stronger, and said, made no fight at all. This last was not to be wondered at. When people know that they have laboured earnestly with the single object of doing their best for a society, and devoted much time, spared with difficulty, it is not they who are likely to lift up a finger to keep themselves in a troublesome post. If there was to be any fight, the horticultural fellows, who did not take the trouble to come up and outvote the Kensingtonians and the few horticulturists who sided with them, ought to have made it, and by their vote have kept in the council, and have given the country fellows the power of voting by proxy.

Now, for the future, it is my firm conviction that a state of the society is possible, free from the dead weight and inert matter which clogs the present one. Consider what a vast number of well-to-do people, fond of their gardens, there are now in the country; very many of them would be willing to help horticulture if it did not cost them much money or trouble. I would make the annual subscription a guinea, and

have no admission fee. I can speak from my experience of a society where, simply because they think it useful and active, many members have joined, and go on subscribing to it, without ever going near any of its meetings; and I believe a very great number of fellows would join at this small subscription. The society ought to have the old Chiswick Gardens as a home, and to make arrangements with the commissioners, and undertake, for a fixed consideration, to furnish the conservatory, and to hold committee meetings and a certain number of shows at South Kensington. I believe the money from this source, with that from the numerous guinea fellows, would give more free funds for horticulture than the society has ever yet possessed, and the society would be a real horticultural society. I very much wish that some of your readers may be incited to consider this matter. It would involve some hard, but by no means unpleasant, and certainly most useful, work to organise some such scheme as the above.

Heatherbank, Weybridge Heath.

GEORGE F. WILSON.

HARDY FLOWERS OF THE SEASON.

AT this time of year, when the nights are lengthening and the days are darkening, and when the summer flowers and bedding plants are more or less unsightly, or are out of sight altogether, it is pleasant to note some of the few hardy plants which are still bright and pleasant to look upon. Few as they are, most people would be surprised to know how many and how fair they are. We will pass over the Asters and Chrysanthemums (I cannot bring myself to write of Chrysanthema), valuable as they are, for they have been fully treated of, as, indeed, they deserve, in recent numbers of THE GARDEN. First of all, strange to say almost rarest of all, and perhaps fairest of all, comes the Sparaxis, well named pulcherrima. It is hardly ever seen in the open air, yet here, in the south of Scotland, it is as hardy as any of the Iris tribe, and, since the beginning of August, a thick row of it planted against a south wall has been sending up a succession of airy bell-clusters of all shades of rose. A sheltered sunny corner is worthily occupied by a group of this delightful plant. Among the Sedums there are many second and third rate varieties grown; most beautiful of all (not excepting the much over-rated spectabile) is Sieboldii. It is rarely seen except in conservatories, but its proper place is the rock garden, where, at this season, it will be a mass of bright rose, contrasting well with its glaucous fleshy leaves. *S. spurium* varies much in colour; some of the shades are common-place, but the deeper-coloured varieties are well worth growing, though not so choice as the last species, and it continues to flower very late. Among the *Oenotheras* or Evening Primroses, the best late flowerer is probably the new *O. Frazeri*. It flowers well in summer also; the foliage is a beautiful glossy green, changing in autumn to bright red in parts, and the flowers are a lively golden hue; it is quite dwarf. A valuable second blow of flowers may be had from *Campanula carpatica* (and probably from its near relative *turbinata*), by cutting it over directly the first bloom is over—not too close, but just enough to cut off all the seed vessels. It is now (Oct. 23) in great beauty. If Sweet Peas are regularly deprived of their pods as they form, they will continue in bloom till the frost destroys them, which at this date has not occurred. *Scabiosa nana*, the dwarf double Scabious, gives a great many different tints in abundance just now; and so with the single *Pyrethrum roseum* (a far prettier flower than the double), if cut over in the end of June. If to these really late flowers be added the late Roses, of which there is this year an abundant crop, of which Gloire de Dijon is the most profuse—but Souvenir de Malmaison, Jules Margottin, Anna Alexieff, and Duchess of Sutherland are by no means niggardly—it is easy to form, by adding late-planted *Gladiolus* and *Schizostylis coccinea* in a sheltered part of the garden, an attractive late autumn bed, which, if it cannot rival the spring garden in colour, or the summer garden in profusion, will, at all events, be as certain in its results and as valuable in its produce. On revising the above, I find an important colour wanting—purple. Let it be given in the presence of the hardy *Verbena venosa*, which is an excellent late-flowering variety.

SALMONICEPS.

NOTES OF THE WEEK.

— THE true Jalap plant (*Exogonium Purga*) has been flowering, trained along the south wall of the new range at Kew. Grown in a cool house, and fully exposed to the sun, this makes a very ornate climber.

— THE chief attraction of the Utah Territorial Show, held in Salt Lake City the first week in October, was the fruit. There were Apples, Peaches, Pears, Plums, and Grapes in profusion, and of excellent quality.

— WE have received from Messrs. Treloar & Sons, of Ludgate Hill, a garden mat made of cocoa-nut fibre, which looks as if it would prove a far better protection against frost than the ordinary Russian mat. It is strongly put together, and is said to be waterproof, a point greatly in its favour, while, as regards its durability, the lasting properties of cocoa-nut fibre are a sufficient guarantee.

— MESSRS. JAS. VEITCH & SONS have the rare and beautiful *Oncidium Rogersii* now in flower. This is one of the finest species in cultivation, and bears over a hundred great golden-lipped flowers on a branching spike. The same firm have also a nice little plant of *Barkeria elegans* now in flower. It was figured and described some years ago, but has always been a great rarity in collections.

— A NEW manure called "Dissolved Peruvian Guano," concerning which an advertisement will be found in another column, has just made its appearance in the market. It is prepared from genuine Peruvian Government guano, the result of its special treatment being that the ammonia is fixed, the phosphates in the raw guano rendered soluble, and the manure brought into the condition of a free dry powder. It is said to lose nothing from exposure, and is reported to be the richest, and, considering the quality, the cheapest guaranteed manure at present in the market.

— NOVEMBER 17th and the three following days have been fixed as the dates on which Messrs. Carter & Co.'s root-show will take place at the Crystal Palace. Two prizes of ten guineas each are to be awarded on the occasion, and two of five guineas, while of other prizes of less value a great number are offered. Schedules containing "conditions of competition" are now ready, and may be had of the firm, 237, High Holborn.

— WE learn that arrangements are being made for holding next year, in the Lower Grounds, Aston, Birmingham, a grand Midland Counties' Horticultural Exhibition, to commence on Tuesday July 7th, and to continue over the three following days. A schedule of prizes, amounting to £1,000, is in course of publication. The liberal spirit in which Mr. Quilter, the proprietor of the grounds, purposes to make the arrangements incidental to the exhibition, promises to add very much to the attractions of the occasion.

— MR. TUTTLE, of Baraboo, Wisconsin, who, we believe, is regarded as an authority on fruit matters in his part of the country, recently said to a writer in the *Milwaukee Sentinel* that having this season examined more than fifty of the best orchards, he finds that all the Russian Apples, the Fameuse, St. Lawrence, Red Astrachan, Plum Cider, and Early Joe, went through the deadly cold of the last hard winter without injury. The Ben Davis, Winter Wine Sap, Northern Spy, Greenings, Belle fleurs, and Pippins have nearly all been killed.

— FOR some time past it has been feared that the Lords of the Manor were about to make encroachments on Clapham Common, and that buildings were likely to be erected in the neighbourhood, which would interfere with the Common as a public recreation ground. This has led the Metropolitan Board of Works to take the initiative in securing the Common for the use of the public in perpetuity, and negotiations are at present in progress for effecting that object. The probability, therefore, is that in a short time the Common will become absolutely vested in the Board, and secured to the public for ever as a recreation ground.

— THERE is now a probability that the beautiful ornamental shrub, *Xanthoceras sorbifolia* (to which allusion was made at p. 470, Vol. III. of THE GARDEN), will soon become better known in our gardens and pleasure-grounds. All attempts hitherto made to propagate it by means of cuttings, layers, and grafting it upon roots of *Koeleria* (the only other hardy Sapindaceous plant that we possess) have failed, with the exception of a few cuttings which are reported to have succeeded in the nurseries of MM. Thibaut & Keteleer. This year, however, the original specimen in the gardens of the Muséum at Paris has fruited for the first time, and we may, therefore, expect to hear of seedlings by next season. The fruit is described as being of the size of a large Apricot, of an irregular obovoid shape, ending in a sharp projecting point at the apex, and supported by a swollen footstalk. If the seeds of these fruit germinate, the authorities at the Muséum intend to distribute the earliest seedlings amongst the principal Botanic Gardens of Europe,

and any that may be raised afterwards among the horticultural world in general. We cannot too soon enjoy the privilege of admiring this exquisite shrub in our own gardens and parks.

— MR. JOHN STUART MILL, we learn from *Nature*, has left his herbarium of European plants to the Royal Gardens, Kew.

— ACCORDING to an Alabama newspaper, the shooting of insectivorous birds has cost that State £2,000,000 this year alone, in the ravages made by the "cotton-caterpillar."

— SIX hundred acres of ground near Muscatine, Iowa, were devoted during the past summer to the culture of Watermelons. Muscatine Island has long been noted for the excellence of its Melons.

— THE winter has already set in in the north. At Drumlanrig, on the Clyde, 12° of frost have already been registered, and the hills are white with snow. An equal amount of frost has also been experienced in Yorkshire, and other counties in the North of England.

— LYCASTE LASIOGLOSSA is now in flower in the Royal Exotic Nursery, Chelsea. It has brown sepals, golden-yellow petals, and a very hairy lip. In habit it is identical with the better known *L. Skinneri*, and, like that species, it comes from Guatemala.

— MISS KATE HEFFER, of Pewaukee, was the champion in the floral department not only at the Wisconsin State Exhibition but also at Oshkosh, her combined premiums amounting to nearly £20. We are informed by an American paper that the young and lovely lady (for such we are bound to believe her) is not a little proud of her success. She had set her heart on having an organ, and this prize money comes just in time.

— THE bright scarlet berries of the *Cotoneaster Simmondsii* produce a fine effect at this season of the year. We saw a good example of it the other day in some small shrubberies at Castledon Hall, near Farnborough, where the *Cotoneaster* has been freely planted. We recommend this kind to those who wish to plant with a view to having their grounds as interesting as possible throughout the duller months of the year.

— MR. G. F. WILSON informs us that at Mr. Hamborough's, Steep Hill Castle, near Ventnor, Isle of Wight, the beautiful *Cyclamen hederacifolium*, both the white and pink varieties, may be seen growing in quantity, as if wild, among the Grass. If planted rather deep, this is quite hardy in less favoured parts of the country, and the beauty of its leaves alone makes it well worthy of more general cultivation.

— MR. GASSETT is having remarkably interesting wild and bog gardens formed in his grounds near Ryde, in the Isle of Wight. They consist of rockeries, planted with the choicest Alpines, basins, and waterfalls, and boggy or saturated slopes planted with marsh and water plants. The backs of the mounds connected with the rockwork are clothed with Heather, and in front of hedge-rows Roses are planted, so that they may grow up and form a part of the hedge, adding much beauty thereto.

— AN effectual remedy for the devastations committed on the Vines by the *Phylloxera vastatrix* is said to have been discovered by MM. Monestier, Lantand, and D'Ortoman, of Montpellier. It consists in placing in the ground, close to the root of the infected plant, an uncorked tube containing about 2 oz. of bi-sulphide of carbon. The vapour from the bi-sulphide in a short time permeates the whole of the ground about the root; the vapour is not, like the liquid itself, injurious to the plant, but is immediately fatal to the insect. Care must be taken not to spill any of the liquid on the roots of the Vine. We only hope the news is true.

— IT is interesting to observe the rapid growth of garden and farm literature in America. Not only are there journals of the highest character specially devoted to it, as the *Albany Cultivator*, the *American Agriculturist*, and the *Gardener's Monthly*, but of late some of the great New York public journals have a special department devoted to horticulture and agriculture. This is notably the case with the weekly issue of the *New York Tribune*, which is now usually well filled with original and valuable matter interesting to the fruit grower, farmer, and gardener; so good of its kind, indeed, are the contents of such journals as we name, that they are indispensable to all who wish to keep themselves up to the time in all that concerns progress in the rural arts.

— THE Royal Horticultural Society of Tuscany has announced an International Horticultural Exhibition to be held at Florence from May 17 to 25, 1874, and has also issued the programme of an International Botanical Congress to be held on three days during the exhibition. A very large number of prizes, including 100 gold medals, are offered for collections of plants or single plants, which are included in 248 different classes; and among other objects for which prizes may be obtained are bouquets, botanical drawings, models, garden tools and ornaments, garden structures, manures, herbaria, specimens of timber, &c.

THE INDOOR GARDEN.

STAPELIA HIRSUTA MINOR.

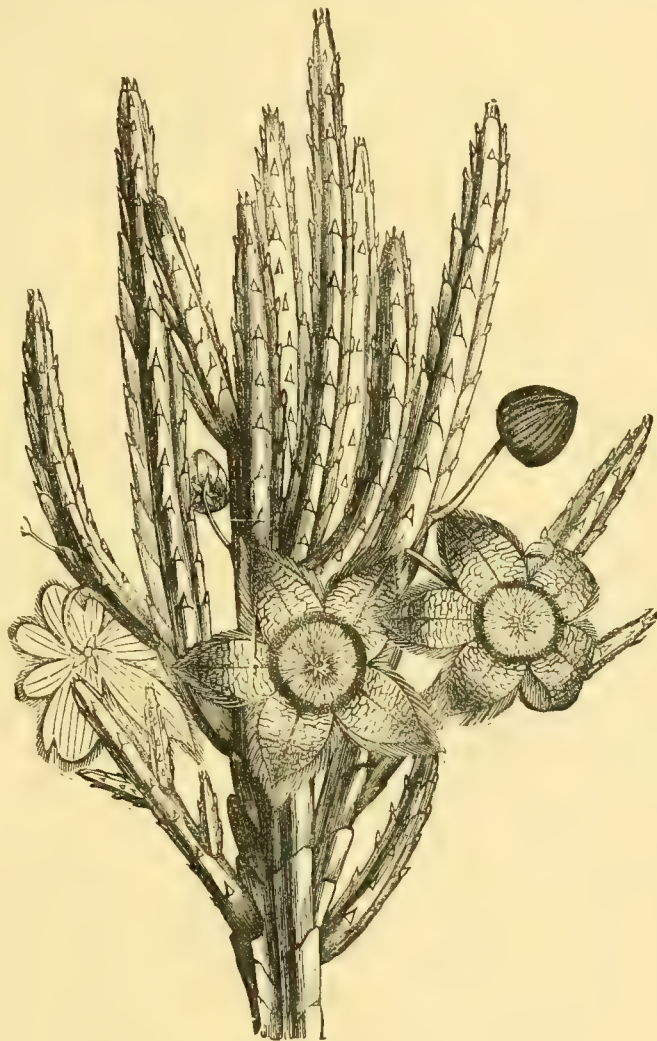
ALTHOUGH the flowers of the Stapelias are not merely devoid of fragrance, but exhale a repulsively fetid carrion-like odour, many of them are, nevertheless, so beautiful in colour and singular in form, that the genus should be more largely cultivated than it is. There are about ninety species of these plants, all of which are natives of the Cape of Good Hope, with the exception of *S. europæa*, which is found in Spain and Algeria, as well as in South Africa. *S. hirsuta minor*, of which we give an illustration below, and the allied species, emit such a powerful scent of decomposing flesh, that the common blow-fly is deceived into depositing its eggs among the hairs of the corolla. This plant was first introduced into our gardens in 1727. Its numerous succulent stems are thickly set with quadrangular, conical, ascending branches, forming tufts from 12 to 16 inches in height. As in the genus *Cactus*, the leaves are very rudimentary, being reduced to insignificant scale-like processes. The flowers are solitary, from 2 inches to 2½ inches in diameter, and are produced near the bases of the branches. The petals are thick and fleshy, smooth and greenish on the underside, very much wrinkled on the upper surface, marked near the base with transverse sinuous lines of purplish-brown, and marbled and spotted all over with blotches of sulphur-yellow. The bottom of the corolla is concave, circular, and of a purplish-brown colour in the centre, while the edges are marked with yellowish spots. The structure of the stamens is very singular. From the bottom of the corolla rises a sort of cup, nearly pentagonal in shape, the upper part of which is divided into ten narrow strips, five of which are turned inwards, and five outwards. The five inner divisions are straight, cylindrical, slender, and covered with purplish tubercles. Each of them is again sub-divided into two parts, of which the outer one has a thickened apex, and is bent over the pistil; the other, or inner division, is quite straight. The five external primary divisions are of a green colour, spotted with purple, are flat and oblong in shape, and forked at the apex. The anthers are of an orange colour. For the culture of these plants, Mr. Croucher recommends a compost of "three parts loam, and one of broken brick, excluding sand or manure; in this soil, with small pots, they grow freely." They may be propagated either from cuttings or from seed. In the former case, the branches should be taken off at a joint to prevent danger of decay and escape of sap. This mode of propagation is much more certain than the other, as, unless the seeds are sown immediately after being gathered, their germination is very doubtful. Mr. Croucher, who has had a very wide experience with plants of this genus, advises that the seed should be sown in "shallow

pans in light soil, and put on gentle bottom heat. As soon as they are well up, put them on a shelf close to the glass, not potting off until they are well grown, as they often stand still for some time or die."

SELAGINELLAS.

WE recommend these beautiful, fresh-growing, and highly ornamental little plants to all who have convenience at hand for their culture. It is almost needless to say that they never flower, but are scandent or sub-erect plants, for the most part intermediate in size between Ferns and Mosses. Some of the species are beginning to be much appreciated by our decorative florists, and this is notably the case with *S. hortensis*, a fresh

vigorous-growing species, often known as *S. denticulata* in gardens. It is one of the most widely-distributed members of the group, and will grow anywhere—even out in the flower-beds during summer—forming a dense carpet of the freshest green colour imaginable. For cool conservatories it is just the thing, and may be used either for carpeting beds or for edgings and margins. Many of the flower-beds in the Parc Monceaux, Paris, were densely carpeted with this plant during the past summer, and it greatly enhanced their neat and effective appearance. It keeps fresh and green through the winter, and is very useful in Ferneries or conservatories planted out in the natural style, where in winter it reminds one of the fresh turf as we catch glimpses of it here and there between the stems of Palms and Tree-Ferns. During winter and spring, pots of *Crocus*, *Hyacinths*, and forced shrubs can be plunged in the borders or beds, and the effect of these is considerably heightened by being contrasted with the fresh green carpet beneath. For purposes such as we have indicated, or for growing in small pots for the decoration of windows and apartments, one London florist alone pays from £300 to £400 annually for his supply of this elegant little trailing plant! We have very many species in cultivation, all of which may be grown in the moist and genial temperature of a drawing-room plant-case or



Stapelia hirsuta minor.

beneath a glass shade. Selaginellas grow best in a light well-drained compost of fibrous peat, to which is added one-fourth well decomposed leaf-mould, and sufficient well-washed sand to keep the whole fresh and open, with a little turfy loam for strong-growing kinds. Some are spreading in their habit of growth, and should be grown in flat pans, unless planted out. The scandent or creeping species may be grown either flat on the surface or pegged on cones formed of peat and Sphagnum. They are highly ornamental as decorative stove plants, or for exhibition. Some of the tall growers also do well in pans, but these must be allowed to grow naturally. There are one or two curious species that change to white in the evening, or in the dark, and resume their green

tint with the returning daylight. *S. uncinata* and *S. casia* are of a lovely metallic blue colour when grown in shade and moisture, as is also the vigorous-growing variety of the last-named, *S. casia arborea*. This last-named species is very useful as a climber in a moist shady stove or Fernery, and may be trained up the stems of Tree Ferns, or allowed to droop naturally from projecting masses of rockwork. We now propose to describe a few of the best species, and to give such hints as we think necessary in their culture, observing that most of the Selaginellas are very easily propagated by dividing old-established specimens.

S. AFRICANA.—A deep, glossy, erect-growing species from the West of Africa, and one of the most effective in cultivation when well grown. Its fronds are from 12 to 15 inches high, and triangular in outline. It is very useful for stove decoration, and should be in every collection, however select.

S. APUS.—A dwarf dense-growing little Brazilian species, seldom growing above 1 inch in height. It is of the freshest green colour imaginable, and forms a beautiful ornament in the plant-stove. This species is easily propagated, and, as it grows quickly, a pan may easily be furnished by pricking in little tufts an inch apart over the entire surface. It likes a little heat, but grows freely in a Wardian case. It is also called *S. densa* and *S. apoda*.

S. ATROVIRIDIS.—This is a very strong-growing species, and one of the most distinct in the whole group. It produces strong flat growths a foot high, throwing out numerous strong roots from their under-surfaces, while the large, obtuse leaflets are of a deep glossy green colour, as implied by its specific name. It does best in the plant-stove, but will also grow well in a close humid plant-case. Its fine branches come in very acceptable for dinner-table and other floral decorations.

S. CÆSIA.—This plant is very distinct, its shoots in a warm humid case being of a lovely blue tint, shining with metallic lustre. It is more properly named *S. uncinata*, but is generally found in gardens under the above name. Its habit is rambling, and it is a very free grower, well worth more extended cultivation both in stoves and Wardian cases.

S. CÆSIA ARBOREA.—This is a very strong-growing species, of rambling habit, its foliage being of the same iridescent hue as the last-named plant. I have seen this plant with growths from 8 to 10 feet in length, hanging gracefully from Tree Ferns in the fine Ferneries of S. Mendel, Esq., Manley Hall, Manchester; it grows in a moderate heat, but must be well supplied with moisture.

S. CAULESCENS.—A very graceful erect-growing species, producing close branches of a light and pleasing green colour. There are two or three varieties of this plant, the shoots of which vary from 6 inches to nearly 2 feet in length. It fruits freely, and should be in every collection of these beautiful little plants. Like the last-named, it is a native of the East Indies, and will grow in a Wardian case.

S. DENTICULATA.—One of the prettiest of the creeping kinds, and sufficiently hardy to grow out of doors during summer in a moist and sheltered position. It should be added to every collection, however small, and will be found to luxuriate in a close case or beneath a bell-glass. It must not be confounded with *S. (Kraussiana) hortensis*, another European half-hardy species, very generally cultivated under this name.

S. ERYTHROPUS.—One of the most effective and free-growing of the upright section, producing a dense mass of triangular flattened fronds of a light green colour. These growths vary from 10 to 15 inches in height, and are admirable substitutes for Ferns in furnishing floral decorations. One drawback to the use of Selaginellas is their tendency to curl when placed for an hour or two in a dry and hot atmosphere. Always choose the best developed fronds and bed them in sand and water, or, where practicable, lay them down flat on damp sand, in which position they will last for a considerable time.

S. HELVETICA.—A dwarf-growing species, hardy out of doors during the summer months, and admirably adapted either for a Wardian case or for edgings in the greenhouse or cool conservatory. It is a native of the Alps, and is well worth cultivation.

S. (KRAUSSIANA) hortensis.—This is the most generally useful of all the species, and as a fresh green carpet-plant is unsurpassed. It will grow in a hot position, but must receive careful attention in such places, and a liberal allowance of water,

or it turns yellow and looks sickly. It likes a cool moist position where it grows very rapidly and looks fresh and green all the year round. Carpets of this plant should be regularly dug up and re-planted every spring, by which simple process they may be kept fresh and clean. For Fern-cases or hanging-baskets this is one of the best species in cultivation, and should be grown wherever there is room to spare in the window, or balcony, or on the bare surface of large pots and tubs.

S. KRAUSSIANA VARIEGATA.—A variety of the last plant, exactly similar in habit, but having its branches tipped with blotches of creamy-white, which give it a bright and distinct appearance.

S. SARMENTOSA.—This is a free-growing plant, creeping over the pan and rooting from its entire under surface. Its fronds are of a pale green colour, and some of its longest stems often attain 15 to 20 inches in length. It is a West Indian species and does well in an ordinary plant-stove when supplied with plenty of moisture at the root and overhead.

S. MUTABILIS.—Of all the species of Selaginella this ranks as one of the most curious. Its leaves change to white during the night, or on its being removed to a dark apartment. This is owing to a remarkable change of position which takes place in the chlorophyl, or green colouring matter of the leaves. It is well worth growing in a Wardian case on this account, apart from its elegant freshness as a decorative plant.

F. W. B.

THE ACTION OF LIGHT ON SEEDS.

THE following remarks are intended to show which light, whether red, yellow, or blue, or a mixture of those colours, is best suited for the rapid and successful germination of seeds. Previously, however, let me consider briefly the process of germination itself, and, in doing so, a very suitable starting point may be found in the seed. A seed consists of three parts, namely, the cotyledons (one or more), the radicle, and the plumule, which are usually enclosed in one outer skin, envelope, or cover. During germination, the radicle is converted into a root, which sinks down into the earth for the purpose of acquiring nutriment from the soil, while, on the other hand, the plumule shoots upwards, and forms or becomes the stem of the plant. The fact that seeds do not germinate alike in all situations and under different circumstances, leads me to say that seeds cannot germinate when deprived of moisture; but, by keeping them dry for any length of time we do not destroy or, as far as we know, in any way injure their future vegetating properties. Too much water, however, is as bad as too little. There also is a certain heat required. No seed ever yet experimented on can be made to germinate at or below the freezing point, yet this temperature, when continued even, does not injure the power of the seed to germinate. Here, I think, we may safely conclude that a certain temperature above 32° is necessary for the successful germination of seeds, and that each family of plants seems to require a degree peculiar to itself. The various gases, as chlorine, hydrogen, carbonic acid, nitrogen, sulphuretted hydrogen, &c., have been tried, for experiment, with the view of seeing if seeds would germinate under such atmospheres, and the decided result has been that they would not; from further experiments, which it would be needless to mention here in detail, it has been found that seeds will not germinate in any other atmosphere than one containing a large proportion of oxygen, as the atmosphere we breathe, which I may here say I have found to contain, according to the

Mean of ten experiments	. . . . .	20.91
Do. do.	. . . . .	20.901
Do. three do.	. . . . .	20.91
Mean of the whole	. . . . .	20.907

oxygen per cent.; possibly, in some cases, it may average 20.96, but such a result I have been unable to come to.

Now, having tried to explain that seeds do not germinate unless supplied with moisture, oxygen, and a certain degree of heat, let us see what can be done at examining they effect they have upon the seed and its growth. The cotyledons contain a quantity of farinaceous matter, provided solely for the purpose of supplying the embryo with food when required.

It is evident, however, that this must have undergone some preparation before it could be applied by the plant to the nourishment or formation and completion of the organs. We are thus led to believe that the phenomena of germination are owing to the chemical changes effected in the food, and the consequent development of the organs of the plant.

Under favourable conditions seeds imbibe moisture, and emit carbonic acid gas, even when oxygen is not present. When such are the circumstances, the germination here stops, but, on the other hand, if oxygen be present, a portion of it is also converted into carbonic acid, and the process of germination continues. Seeds, therefore, should not be placed so deep in the soil as to be deprived of it. From experiments first made by Saussure, and afterwards repeated by various other chemists with the same result, it was proved that none of the oxygen is absorbed, or, at least, if absorbed is not retained, being emitted in combination with carbon, in the form of carbonic acid.

Since we have no reliable evidence to show that any water is decomposed during germination, there being neither oxygen nor hydrogen liberated, we must conclude that such is not the case. The mucilage of some seeds is supposed during germination to be turned into sugar, from the fact that several seeds by germinating acquire a sweet taste. But now, as to the effects of light on germination, various are the opinions held by different experimenters on this particular point. The experiments of Ingenhousz have gone to show that seeds always germinate more rapidly in darkness, than when exposed to light; and again, among the old workers, we have Abbé Bertholin, who contradicts the former, and assigns the difference between the germination of seeds in darkness and those in light, to the moisture evaporating from the seeds much more quickly in the light than in the shade. We are then unable to decide very well upon this point unless by experiment. At 11.30, on March 19th last, I placed, each in the same situation, a number of mustard seeds in water. No. 1, under the influence of daylight; 2, yellow light; 3, blue light; 4, red light; and 5, darkness. The results are as follow:—

	1873.	NUMBER OF SEEDS GERMINATED IN				
		Time.	No. 1.	No. 2.	No. 3.	No. 4.
March 24th	...	8 a.m.	...	none	...	none
Do. do.	...	3 p.m.	...	2	...	do.
Do. 25th	...	5 p.m.	...	5	...	do.
Do. 26th	...	3 p.m.	...	5	...	1
Do. 27th	...	8 a.m.	...	5	...	2
Do. 28th	...	8 p.m.	...	7	...	3
Do. 29th	...	8 a.m.	...	all	...	4

I am, therefore, led to believe that the chemically active rays are decidedly injurious to germination, but when diluted, as in the ordinary daylight, their influence is very little. We also notice that seeds germinate more rapidly in daylight than in darkness, and that seeds in yellow light germinate the soonest.

WILLIAM H. WATSON.

Braystones, Beckermest.

Shading for a Fernery.—What is the best mode of shading a Fernery? I have had one built and fitted with Tufa rock-work by Mr. Pulham. The roof only is ribbed glass, and yet the plants have been scorched by the sun to a great extent.—J. J., *Kenny Hall, Manchester*. [On submitting this question to Mr. Baines, he has kindly furnished us with the following answer:—"The best, most durable, and, in the end, most economical shading for a Fernery, or any other garden structure that requires shading, is screen canvas, which should in all cases be moveable. Ribbed glass for any horticultural erection I consider to be a mistake. Plants that require shade at all will not do without shading under it, and the foliage of plants grown under it is not so strong as that under transparent glass; which, even in the case of Ferns, is an essential consideration, as they are so liable to the attacks of thrips, which require stronger applications of tobacco-smoke to kill them than the Ferns will stand without injury, unless they are grown with sufficient light to give them the requisite strength."]

White Indian Daphne—I have a white scented Daphne, which appears to be too large for its pot; it grows in a rambling way, making few additional shoots, and merely lengthening the old ones. Would cutting it back improve it? It flowers early in the spring.—K. A. S. [All Daphnes are somewhat rambling, or what gardeners call "leggy" in habit, therefore, the shoots should be bent round or tied upon some kind of support as closely as possible, and thus circumvented they break more freely than when allowed to grow unchecked. Your plant will flower all the better for being somewhat pot-bound. Cutting it back might improve it, but you will lose a season's flowers. Spring is the best time for re-potting it, when a compost of sandy loam and leaf-mould should be used for it.]

THE FLOWER GARDEN.

SPIRÆA JAPONICA AND ITS VARIEGATED VARIETY.

I CAN endorse all that is said (see p. 319) in favour of *Spiræa japonica*, which is exceedingly beautiful, and, for forcing purposes, very useful. Its graceful flower-spikes are produced in abundance, and are, as your correspondent states, very useful for the purpose of bouquet-making and for table decoration. It also succeeds well in the open air in any ordinary rich soil; but, should the weather set in dry during the summer months, it should be well supplied with water, or it will become unhealthy, and, when that takes place, it requires a season, at least, of liberal treatment to enable it to recover its health. Its flower-spikes are also liable to be injured, or even destroyed by late spring frosts—at least, such was the case with a fine bed of this plant in the open air here during the spring of the present year. A second crop of bloom-spikes was, however, produced at a later period, but greatly inferior to what the first crop gave promise of being. I commenced this paper, however, with the intention of recommending the variegated form of this plant (*Spiræa japonica aurea variegata*), which is well entitled to all that has been said in favour of the normal or green-leaved variety; it has, too, the additional advantage of possessing beautifully golden-veined leaves. Indeed, few variegated plants can compete with this in all respects beautiful *Spiræa*, which has the property (unusual among variegated plants) of flowering as profusely and vigorously as the green-leaved form. Most growers, however, will be inclined to prevent it from flowering in order to give increased vigour and effect to its beautiful foliage. This is undoubtedly one of the plants which only require to become better known to be universally appreciated. P. GRIEVE.

Culford.

HYACINTHS FOR BEDDING.

I KNOW of nothing that produces a richer or more varied effect than the Hyacinth. When planted in masses in the open air, the colours appear deeper than when grown under glass, and, being perfectly hardy, no care, or at least, very little care, is required in its cultivation, beyond being staked with a neat stick to prevent the wind or heavy rains from breaking off the spike of bloom. I am just about preparing the beds to receive the bulbs for next season, and have only been waiting for frost to cut off their summer occupants. I take up the soil, and if I find it too heavy or close in texture, some is removed, and sufficient light sandy soil is wheeled in to raise the surface a few inches above the general level of the lawn. I then take the bulbs and plant them 3 inches deep and 6 inches apart, and drop a little sand on to them before filling up with the soil, as it is necessary to bear in mind that in Holland, where they are so extensively cultivated for commerce, the soil is nearly all sand; and therefore it is quite impossible to err in making use of too much of that material. I purchase fresh bulbs every year for the most prominent positions, and get them in separate and distinct colours for something like 25s. or 30s. per 100, or, if it is not necessary to plant them in separate colours, the mixtures can be purchased, some 5s. or 6s. per 100 less; but in addition to those purchased, I am not so extravagant as to throw away those forced in the previous spring, which are carefully planted out when done blooming into a sheltered place, and regularly tended with water until the foliage dies off; they are then taken up, dried, and put away in boxes. With these I plant the beds and borders, not immediately under the eye of the occupants of the drawing-room, as they do not produce such fine spikes of bloom as those freshly imported. In some cases I use them in beds that have, if I may so describe it, an undergrowth of some other spring-flowering plants, such as *Myosotis*, *Silene pendula*, *Limnanthes Douglasii*, &c., which, if not in bloom at the same time acts as a support, and sets off the somewhat stiff and formal appearance of the Hyacinth to better advantage; but, if the colours of the undergrowth are well arranged with the Hyacinths, and they are in bloom together, the effect is superb. I saw once a bed

of *Myosotis* (blue) with white *Hyacinths* dotted in amongst it, producing a charming effect, of course not gaudy, but a nice, soft-coloured setting to a beautiful gem, and for this purpose last season's bulbs do very well. If the *Hyacinths* are the sole occupants of the beds, it will be necessary just to cover over the surface with a thin coating of cocoa-nut fibre, as it assists in protecting the points of the foliage from injury in severe frost, although they are not very tender, for I have more than once noticed them almost frozen through; but I do not like to see the tips of the foliage browned, which is sometimes caused from cold cutting frosts, and this slight protection becomes necessary. As soon as they have done flowering, the bulbs can be taken up, and, if desired, may be replanted for another year in any out-of-the-way spot, but my own practice is to wheel them to the rubbish-heap, for they rarely do much good the following season, unless as patches for decorating shrubbery borders, where they may be planted and remain for years, sending up a few flowers early in the spring.

The Roman *Hyacinth* blooms very freely and without much forcing early in November, and may be had naturally in flower from December until February. It throws up several spikes of small pure white flowers, which are very fragrant, and make capital subjects for a bouquet or button-hole. The bulbs are very small, and should be potted four to six in a 48-size pot, using the same soil as that recommended for their larger congeners. It is very extraordinary, however, that this precocity of blooming is not so much due to the variety as to the climate of Italy, where it is cultivated, and which appears to induce an early growth, and, consequently, early maturing of the bulbs, so that when imported here it blooms naturally some two months before the Dutch varieties, for when grown in Holland it flowers exactly at the same period as the other varieties, and therefore much care should be exercised in procuring those imported from Italy, for, comparing this spike of bloom with the well-known *Hyacinth* is something like gold to tin. C.

Hardy Clematises as Bedding Plants.—Notwithstanding the success which has attended the hybridisation of this magnificent group of flowering plants, I have failed to obtain a variety possessing that remarkable floriferous continuity of bloom which we get in *C. Jackmanii* when used for bedding purposes. Its richness of colour, when grown in masses imparts to the parterre a hue of purple, which is altogether captivating and lovely. My object, however, is not to eulogize the well known merits of *C. Jackmanii*, but to endeavour to ascertain if there really exists amongst the mauve or light coloured varieties a suitable companion to it for "bedding out purposes." I was at one time inclined to believe that in *Lady Bovill* we had found this desirable desideratum, but lovely as the individual blooms of that kind are, I do not find it to possess continuity in the way of bloom to warrant its being successfully admitted into parterre arrangements, where it is important that uniformity in the flowering period of the various subjects should be maintained to the longest possible period, as a single failure produces an unsightly blemish. While fully admitting the marked advance that has taken place amongst *Clematises* owing to hybridisation, I think it important that perfect hardiness and freedom of growth should not be lost sight of in any attempt at cross breeding, for without this the flowering period cannot be sufficiently prolonged, so as to warrant their use in flower-garden arrangements, where most assuredly owing to the brilliance and richness of their colouring and grand proportions, as regards size, they are destined to play a most desirable part. I shall, therefore, be glad for any information from any of your correspondents who may have practically tested the merits of the various sorts as to their continuity of blooming and adaptability for flower-garden embellishment.—GEO. WESTLAND, *Witley Court, Stomport.*

Clematis Jackmanii as a Bedding Plant.—Having received a good account of this *Clematis* as a bedding plant I resolved to give it a trial in that way. In the spring, therefore, of 1871 I got two plants of it to start with; I have four oval beds with arches across the centre of them, 4 feet from the ground at the highest point, and the width of the arch is 2½ feet; the beds are 15 feet one way, and 9 feet the other. On each arch I put one plant, and buried round its roots plenty of rotten manure from an old Melon bed. The plants started well, covered the arches, and flowered beautifully the first year. As soon as they commenced to grow in the spring of 1872 I gave them plenty of liquid manure until they showed flower-buds. This spring I attended to them as usual until the middle of

June, at which time I took and pegged them all over the two beds; by the 20th of July every inch of the beds and the arches was covered as thickly as possible, and they were a mass of flower on the 24th of July, and have been beautiful up to October the 6th, and up to this day I have plenty of flowers on the arches. Every person who has seen them has been delighted with them.—WILLIAM RYAN (gardener to the Earl of Donoughmore), *Knocklofty, Clonmel.*

Ampelopsis Veitchii.—This is one of the most valuable hardy plants which have been introduced for a long time, either for covering walls or for screens; for it will cling to wood as closely as to stone or brick. I put out a plant of it about a foot high three years ago, and it now covers a space of nearly 200 square feet of wall with a dense mass of foliage, and it would have grown much higher if space had permitted it to do so. It reaches 20 feet in length on each side of the root, and has covered every part perfectly without any training or fastening, except simply tying it to the wall when first planted. It is now (October 14th) just commencing to change to a brilliant autumn colour. It is as hardy as the common Virginian Creeper; my specimen of it is planted where it is fully exposed to a piercing north-west wind, and last winter it endured a frost of 30° below zero. It flowers and seeds abundantly; but, being so easily propagated by means of cuttings, I have not troubled to save the seed. In making cuttings it is well to notice that only every third joint has a bud, so that, although every joint would root, it cannot grow without an eye. My attention was first called to this fact by Mr. Meehan, of Germanstown.—J. TAPLIN, *South Amboy, New Jersey, U.S.*

TREES AND FLOWERS IN AUTUMN.

Now what hath entered my loved woods,
And touched their green with sudden change?
What is this last of Nature's moods
That makes the roadside look so strange?
Who blanch'd my Thistle's blushing face,
And gave the winds her silver hair?
Set golden-rod within her place,
And scatter'd Asters everywhere?
Who splash'd with red the Sumach hedge—
The Sassafras with purple stain;
Gave Ivy leaves a ruby edge
And painted all their stems again?
Lo! the change reaches high and wide,
Hath toned the sky to softer blue;
Hath crept along the river-side,
And trod the valleys through and through.
Discoloured every Hazel copse,
And stricken all the pasture lands;
Flung veils across the mountain-tops,
And bound their feet with yellow bands.
Is, then, September come so soon?
Full time doth summer ne'er abide?
While yet it seems but summer's noon,
We're floating down the autumn tide.

—*The Atlantic Monthly.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Ellacombe's Yucca.—The proper name of *Yucca Ellacombei* is *Y. tortulata*. It is very distinct and very handsome. H. N. ELLACOMBE, *Bilton.*

The Best Bedding Heartsease.—After having tried many kinds, I find the best to be *Imperial Blue*. As to *Violas*, none are so good as *Golden Perpetual*. These may be truly called perpetual bloomers.—J. P., *Corstorphine, near Edinburgh.*

White Corolla Fuchsias as Bedding Plants.—These beautiful varieties of the *Fuchsia* family, of which the sort known as *Madame Cornelissen* may be taken as the type, are remarkably well suited for bedding out in the open air. A line of these plants, some 120 yards in length, was planted in front of a low terrace wall, about the middle of last May, and they are now, during the latter part of October, still in full flower, and as beautiful and effective as ever. They were struck as cuttings during the autumn of 1872, and were shaken from the store-pots and planted as stated, so they have been but little trouble. When the stems shall have been cut down by frost, the roots should be covered with an inch or two of dry ashes, which it is expected will be found to be sufficient protection for them during the ensuing winter.—P. GARREY, *Culford.*

The Gowan again.—Just a word more. Your correspondent, who supports Mr. Jackson Gillbanks in this matter, is simply helping to propagate error. Of all men Sir Walter Scott was the least likely to misapply Scotch names, and he makes Dandie Dinmont's wife say to Harry Bertram in "Guy Mannering," when she showed him to his bedroom, the sheets were "bleached on the bonny white Gowan's;" and in that inimitable ballad by William Laidlaw, the friend of Scott, called "Lucy's Flittin'" there is the following passage:—"The lamb likes the Gowan wi' dew when its drookit," by which is meant the Daisy, and nothing else. I can inform your correspondents that where William Laidlaw lived, the Daisy is called by no other name.—"MEET ME IN THE GOWAN LEA."

GARDEN DESTROYERS.

THE COB-WEB APPLE MOTH.

(YPONOMEUTA COGNATELLA.)

THE little moth represented in the accompanying woodcut is very injurious to our Apple trees. As is often the case, its size bears no proportion to its destructive powers. The *Liparis chrysorrhæa*, for example, which is a moderately large Bombyx, is generally thought a very bad inmate in an orchard, and on the continent its hurtful propensities are so well known, and the means of counteracting them so simple, that municipalities and powers have given it renown, by enacting decrees for its extermination and putting a price upon the heads of its members; and yet, destructive as it is, it is nothing to this tiny *Yponomeuta*. The *Liparis* strips the branch on which the brood has been established—nay, many branches may be wholly defoliated, but the whole tree is rarely



The Cob-web Apple Moth.

entirely stripped; whereas the *Yponomeuta* spares nothing; it invades the whole tree, and leaves it as bare as if fire or the locust had passed over it. One thing only it leaves behind it, as it were in charity or contempt, viz., a white veil wrapped round the tree, as if to conceal its nakedness. It looks like a forgotten skeleton enveloped in spiders' webs.

This is the work of the caterpillars. Hatched in the previous winter, they revive in the months of May and June, and the eggs from which they spring having been laid in the previous autumn in numbers near each other, large families or societies speedily spin a commodious tent, represented in the woodcut, in which they are sheltered from sun and rain. At first a number of leaves are enclosed in the web, and on these the young larvæ feed. These are soon consumed. The tent is then enlarged, and more leaves covered in. When all these are consumed, they flit to a new region, where they spin a new web. This repeated by multitudes of families all over the tree, leaves it utterly consumed, and annihilates all chance of the smallest crop. In the month of July the larva passes

into the chrysalis state in its web, the head being downwards. The perfect insect comes out in August. After coupling, the female lays her eggs in numbers in the bifurcation of the branches. The young larvæ are hatched in the month of September. They then shelter under a slight envelope of silk, when they pass the winter in a state of torpidity, out of which they awake in the month of May, to follow the course of life above indicated. This species feeds on the Apple, the Thorn, and sometimes on the Service tree; rarely, if ever, on anything else. The larva, when young, at the beginning of May, is yellowish-white, covered with small blackish points; the head and plate of the first segment blackish brown. When it is adult, at the end of June, it is velvety grey, with two dorsal rows of deep black quadrangular spots. The head, the plate of the first segment, and the true legs, are dull black. The perfect insect has the upper wings entirely pure white, without any tinge of leaden hue, and with about twenty-four small black spots. The lower wings are blackish. The figures are slightly enlarged. No satisfactory remedy has been found for this scourge. Scorching the nests with blazing torches and sweeping them away with stiff brooms have been suggested; but the suggestions are neither very practical nor efficient.

A. M.

THE HEART AND DART MOTH.

(AGROTIS EXCLAMATIONIS.)

UPON meeting with a caterpillar, people are apt to consider it an objectionable creature, ugly, and loathsome, and quite unfit to live, and the poor insect is generally sacrificed to the feeling of the moment, and hurriedly trodden under foot. But caterpillars are neither always ugly, nor destructive, as many of them confine themselves to the weeds and other worthless plants which we are glad to have destroyed, and to keep down. Many of the caterpillars of some of the most beautiful butterflies feed exclusively upon Nettles and Thistles, and some of the larvæ of the rarest moths confine themselves entirely to Brambles and Docks. A general idea also appears to prevail that all caterpillars become in time butterflies, whereas the greater number and, in some instances, the most hurtful, are the larvæ of moths. At the present time one of these, the caterpillar of the Heart and Dart moth (*Agrotis exclamationis*) is busy making its autumnal attack upon such of the vegetables as are still left in the ground; it feeds only by night on Turnips and Cabbages and other vegetables, and may be found with the assistance of a lantern. This is one of the ugly grubs which the ladies and the gardeners loathe, of a dirty brownish putty colour, with darker markings; it is now full fed, and though only found above ground at night, it may be dug up either in the caterpillar or the chrysalis state in the day time, and only deserves a violent death.

OWEN WILSON.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Guano versus Ants.—Will any of your readers kindly inform me whether they have had any experience of the reputed efficacy of guano in banishing these troublesome and hard-to-be-routed pests?—G. A., *Westport*.

Woodlice in Frames.—After trying various remedies, I have found pouring boiling water round the inside of my frames the most effectual. Of course I pour the water close to the sides of the frame, taking care not to let it reach any part of the plants. I have also trapped them in great numbers in flower-pots containing a piece of Apple or Potato as a bait, with some dry Moss loosely placed over it. This, however, is a more tedious way of getting rid of them than by means of the boiling water as just described.—H. W., *Bath*.

Lawn Sand.—I have lately heard that there is some kind of sand which kills weeds in lawns. I shall be obliged if you will tell me what this is and where I can get it.—E. S. C., *Cardiff*. [We presume you allude to Watson's Lawn Sand, a chemical preparation which is said to possess the remarkable property of destroying Dandelions, Daisies, Clover, Plantains, and other weeds, without injuring the Grass. We have had no experience of it ourselves, but the preparation is well recommended by testimonials. You will most likely be able to procure it from or through any of the leading nursery firms.]

A New Rat-trap.—A new manner of catching rats is, according to the *New York Tribune*, exciting great interest among householders. A barrel is filled half full of water. A layer of powdered cork is laid on its surface, and over this a layer of corn meal is sifted. A chair and a box or two are placed unobtrusively in the neighbourhood, whereby the rat gains the edge of the barrel. He sees nothing but the meal. He has no innate ideas which teach him to beware of the treacherous foundation on which that tempting surface rests. He sniffs, he leaps, and goes gently down through meal and cork to his watery grave. If any of his friends see him disappear from the edge of the barrel, they hasten after him to get their share of the probable plunder, and are in turn taken in by hospitable death.

THE GARDEN IN THE HOUSE.

THE GUERNSEY LILY.

(NERINE SARNIENSIS.)

PASSING through Covent Garden, or looking into our seedsmen's shops, we are struck by the unsightly bulbs just shooting out the curious snake-like brown stems of the Guernsey Lily. Unsightly as they are, they will produce in a few weeks one of the most lovely blossoms of the beautiful tribe to which they belong—a blossom which is already a great favourite with many, but which deserves to be more generally known and cultivated. There is a special charm about these bulbous plants, which may be grown so easily in a room, and the development of which may so readily be watched—and there is no more welcome present to an invalid at the present time than a few bulbs of the Guernsey Lily, which may be followed up by hyacinth or tulip bulbs as the year advances. Although called the Guernsey Lily, this beautiful Nerine is not a native of that island. According to Dr. Morison's account of the plant, written in 1680, a Dutch or English ship (it is uncertain which), coming from Japan, with some bulbs of this Lily on board, was wrecked on the coast of Guernsey; the roots were cast upon the shore and soon buried in the sand, by the force of the winds and waves. Some years afterwards, to the great surprise of the inhabitants, the flowers appeared in all their beauty, and the plant was soon afterwards introduced to England, having been cultivated at Wimbledon by General Lambert in 1659. It had previously flowered at Paris on the 7th of October, 1634, roots having been brought there from Nagasaki. The above is the generally received account of its introduction to Guernsey, but other statements of the fact are on record. Thus, it is said that the natives of the island, finding the roots cast upon their shores, thought they were Onions, and planted them as such, being greatly surprised when, a year or two after, the flowers were produced. Another version of the story states that the roots were among the ballast of a merchant ship from the West Indies, which unloaded at Guernsey, and that the plants sprang up among the ballast. Dr. James Douglas, who wrote a long illustrated account of the plant in 1725, and a second one in 1737, gives the following traditions, which show that the evidence upon the point is somewhat conflicting. He says:—"A gentleman told Mr. Knowlton that a ship from Japan being cast away on that island, or obliged to put in there by stress of weather, a passenger who had a good number of these roots on board, made a present of some of them to a gentleman by whom he had been very kindly received; telling him withal what beautiful flowers they would yield him in a few years. The gentleman took care to have them planted, but no flower appearing in three or four years afterwards, he ordered them to be dug up, and thrown away with other rubbish into a corner of his garden; and there he had the pleasure of seeing them flower, at a time when he least expected it. From [another] person he learned that his own mother, who had been a great lover and curious observer of this flower in her younger days, could remember perfectly well that sixty years ago they were as common in the island as they are at this day; and that even then it was a custom to send presents of roots to England. This gentleman added further, that had this plant come into their island so lately as Dr. Morison pretends, he does not see how it is possible the roots should have multiplied so prodigiously, that they could afford to send such vast quantities of them every year to England, besides the immense number always to be found in the island. Since Mr. Knowlton's return from Guernsey, Mr. Henry de Saumarez acquainted him that the person who entertained, and received a present of these roots from, the fore-mentioned passenger from Japan was his own grandfather; that these roots were but six in number, though the whole stock in the island had been raised from them; and that this must have happened about four or more years ago." It appears on the same authority that the "universal tradition" in Jersey is that the plant was brought from the East Indies, and that for this reason it is known as the Indian flower; they also call it, but inappropriately, *la belle de nuit*. Kämpfer, who met with it in Japan, says that the root is there considered poisonous. Like other members of the genus, it is also a native of the Cape of Good Hope, being abundant about Table Mountain. The singularly lovely colour of the flowers is much dilated upon by Dr. Douglas. He says, "In this flower there is a beautiful complication of different shades of red that all follow one another; for when it is in its prime there may be plainly discerned in it: 1, a Carnation; 2, a pale scarlet; 3, a fuller scarlet; 4, a Modena; and, 5, a crimson. When we look upon the flower in full sunshine, each leaf appears to be studded with thousands of little diamonds, sparkling and glittering with a most surprising and agreeable lustre; but if we view the same by candle light, these numerous specks or spangles look more

like fine gold dust." The length of time during which the blossoms endure is not among the least recommendations of this beautiful plant. There is no difficulty in cultivating the Guernsey Lily; all that is necessary is to plant it in light peaty sandy soil, in a moderately deep pot, taking care that the bulb is covered.—*Country*.

GARLANDS.

THE use of garlands (says the *Argosy*), both at weddings and funerals, is of great antiquity. According to Pliny, however, flowers were not used in garlands till about the year 380 B.C. Before this date they were composed exclusively of branches of trees, or green herbs. He relates that the painter Pausias being in love with the garland-maker Glycera, first caused flowers to be combined with the green. These two, the one working in the materials nature gave to her hand, the other imitating them on his canvas, vied with each other in the novelty and taste of their designs, and thus introduced the fashion. Amongst the Greeks, Roses, Violets, and Myrtle, appear to have been the favourite flowers for garlands. The first, sacred to the Graces, as well as to the god of silence, the second believed to have health-restoring powers, and the third dedicated to Venus, whose altar was dedicated with wreaths of myrtle. By the laws of the twelve tables, those were crowned with garlands when dead, who in life had merited the honour. The public games had each a distinctive crown, and not only had the victors their temples wreathed with Parsley, Fennel, or other herbs, but, according to Pliny, a like token of respect was granted to their parents. Amongst the Romans, the same custom prevailed; and a civic crown of Oak leaves was the reward of him who had saved the life of a Roman citizen. A Roman bride wore a chaplet of flowers and herbs upon her head, and a girdle of wool about her waist, and at funeral feasts the mourners wore garlands while celebrating the virtues and achievements of the dead. When paganism retired before the advance of Christianity, all ancient customs were not abolished; and the beautiful and significant use of herbs and flowers at weddings and funerals was still retained. In Cole's "Art of Simpling" he thus speaks of garlands formed of the Cypress, Rosemary, and Bay. "They are all plants which fade not a good while after they are gathered and used—as I conceive—to intimate unto us, that the remembrance of the present solemnity might not die presently, but be kept in mind for many years." Flowers, on the contrary, were used as emblematic of the shortness of life. Amongst the Anglo-Saxons, flowers appeared both at their bridal and burial feasts. After the "benedictional ceremony," as Strutt calls it, the bride and bridegroom were crowned. But as these garlands were kept in the church on purpose, they must of course have been composed of artificial flowers. That bridal chaplets continued to be worn, contemporary writers bear witness. Chaucer takes care not to omit the garland in describing Griselde adorned for her marriage. In the fifteenth century brides wore garlands either of flowers or corn-ears."

The poets and authors of the sixteenth and seventeenth centuries abound with references to plants and flowers as used both in bridal and funeral ceremonies. At this period, trees, herbs, and flowers had a clearly defined significance. Cypress and Yew were emblematic of death and immortality; Rue was the "herb o' grace;" Rosemary was for remembrance, and is mentioned by several old herbalists as good for strengthening the memory. Violets symbolised fidelity, the Columbine desertion, and the Willow has been from time immemorial the tree of mourning, especially devoted to forsaken lovers. These sweet old superstitions have disappeared before the light of reason. We no longer believe in the signatures of plants and their consequent efficacy, but the familiar flowers of our poets still speak to us in a language we feel, while the grander exotics are dumb. Strutt gives a detailed description of a wedding procession in the time of Queen Elizabeth. The author is speaking of the marriage of his hero. "The bride being attired in a gown of sheep's russet, and a kirtle of fine worsted, her head attired with a billiment of gold, and her hair as yellow as gold hanging down behind her, which was curiously combed and pleated, according to the manner of these days; she was led to church between two sweet boys, with bride laces, and Rosemary tied about their silken sleeves. Then was there a fair bride cup, of silver gilt, carried before her, wherein was a goodly branch of Rosemary gilded very fair, and hung about with silken ribbons of all colours; next there was a noise of musicians, that played all the way before her.—After her, came the chiefest maidens of the country, some bearing bride cakes, and some garlands made of Wheat finely gilded, and so passed to the church; and the bridegroom finely apparelled, with the young men followed close behind." By this it would seem that the emblematic garlands were carried by the bridesmaids, and that the bride wore instead an ornament of gold. At the end of the seven

teenth or beginning of the eighteenth century, garlands were still borne at funerals, though they were then mostly composed of artificial flowers, with a mixture of gold and silver tinsel, silk, dyed horn, and other tawdry additions. In the centre of these crowns or garlands hung a piece of white paper shaped in the form of a glove, on which the name and age of the deceased was inscribed. In Yorkshire, and other parts of England, the custom of hanging up garlands of cut white paper over the seat that a "virgin dead" had once occupied in church, prevailed to a late date. At the present time in various parts of Germany and northern Europe, a maiden when laid in her coffin, is crowned with a Myrtle wreath. In the south also the bodies of young girls and children are crowned, but generally with artificial flowers, too often of a tawdry kind. The wreaths of Immortelles on the tombs abroad, particularly in France, are familiar to everyone. It is a touching spectacle to see whole families loaded with flowers and garlands, trooping to the cemeteries on All Souls' Day, to deposit their tribute of love at the graves of the departed. In Père-la-Chaise, the tomb of Abelard and Heloise used to be pointed out, the effigies almost concealed by wreaths of Immortelles placed there by "*les amoureux infortunés*," it was said. To revert to the brighter side of the subject, garlands have continued to constitute an essential part of bridal array, in all countries, though the flowers selected for this purpose vary. In Normandy Roses find favour. When a man has little or no dowry to give his daughter, it is a saying there, that he will give her a chaplet of Roses. In Italy the Jasmine is the flower selected. In Germany the Myrtle wreath prevails, as in the classic days of Greece and Rome. It is a frequent practice for a young girl to plant a Myrtle, and to watch and tend it, till the time arrives when she requires its delicate blossoms for a bridal wreath. Should she die unmarried, the same Myrtle furnishes her "*Todtenkranz*." It is considered extremely unlucky to present another with Myrtle from a plant dedicated to one alone, either for life or death. The Myrtle crown of the bride is frequently alluded to by German poets. In the northern provinces of Germany, and in Scandinavia, the bridal crowns are composed of artificial Myrtle, ornamented in a manner more showy than tasteful, with additional flowers in gold and silver. These crowns are often a foot or more in height. In the evening the garlands are "*abgetanzt*," danced off; a lively tune strikes up, and the bridesmaids and other girls dance round the bride, who is blindfolded. Suddenly the music stops, when the bride places the crown on the head of the girl who happens to stand before her at the moment. Of course the maiden thus crowned will be the next to be married. These bridal wreaths are kept as cherished mementoes—often under glass. Should a silver wedding-day arrive, after twenty-five years of married life, a silver wreath is worn. Should the venerable couple survive to celebrate the fiftieth anniversary, the matron is crowned with a golden garland. German ladies of high rank have now, however, like the English, almost universally adopted the wreath of Orange blossoms. The first idea of wearing this flower in bridal garlands seems to have been derived from the Saracens, amongst whom the Orange branch, from the circumstance of its bearing fruit and flowers at the same time, was considered an emblem of prosperity. By the Saracens not only the Orange itself, but its symbolic meaning was introduced into Spain, and thence into France; thus, the fashion of wearing the blossom travelled northwards to England. None of our older poets allude to the Orange blossom; it is probable, therefore, that it is of comparatively modern use as a bridal adornment. It has been suggested that the fashion was introduced into England by Henrietta Maria, Queen of Charles I.; but this seems to be mere conjecture. Thus, in all times and places, have flower garlands been associated with the happiest and most mournful epochs. Lovely emblems whispering to us of faith and remembrance, of mortal joys and immortal hopes.

Japanese Plant Shops.—The shops of horticulturists are full of elegant aquariums, combining the elements of a landscape—a pond with tiny islands, a pile of rocks, a little cottage on the slope of a miniature mountain, on the top of which are growing Lilliputian Cedar trees and Bamboos; handsome basins of blue porcelain with marine plants growing out of beds of shells and fine sand, and strange fishes of the tropics sporting in the clear water; bird cages, surmounted with a vase of flowers and long Grasses and Vines, which give the birds the appearance of nestling under a dome of verdure. Dwarf trees and gigantic flowers, in striking contrast, abound on every side, and so great is their variety and beauty, that it would really be embarrassing to make a selection. It is a noticeable fact that the Chinese taste for distorting plants and trees into the shape of animals does not prevail in Japan, and, with the exception of dwarfing them, they are allowed to grow according to the laws of Nature, and also that the collections of ever-green and variegated plants are most extensive and beautiful.

THE FRUIT GARDEN.

TRIALS OF PEARS.

From the always interesting *Albany Cultivator* we glean some hints as to the opinions on Pears given at the recent great fruit-growers' meeting at Boston:—

Washington.—In some places this has the drawback of dropping its leaves, rendering it occasionally worthless.

Belle Lucrative.—This was generally regarded as a variety for the amateur only, of excellent quality under the most favourable influences; but of no value for market.

Goodale.—This was mentioned as a promising new sort; but, although a fine grower and a handsome fruit, it was not generally considered as better than "third-rate" in quality.

Souvenir du Congres.—This was regarded by several pomologists present as one of the most promising—perhaps the most so—of all the new sorts. Mr. P. Barry alluded to its large size, handsome appearance, great productiveness, and handsome growth, and also to the fine quality of the fruit. President Wilder and some others confirmed this opinion. Mr. Thomas agreed on all points except its quality, which he feared would not prove good enough.

Beurre d'Anjou.—When the name of this Pear was announced, the president called for objections to it—not for commendations, which might be had in abundance, but for positive faults, if there were any—as the shortest way to arrive at the characteristics belonging to this renowned Pear. Immediately a large number of voices were heard in its praise—which, it seemed, could not be kept down—when the president repeated his request for faults or defects, and not for excellent points. Mr. Foote, of Massachusetts, and one other member responded by saying that the only fault was the occasional occurrence of small hard lumps in the flesh.

FRUIT GATHERERS.

YOUR notice of a Belgian fruit-gatherer (see p. 218), has reminded me of one which I used with the best results in South Germany. The construction of this simple implement



may be easily understood from the accompanying illustration. The fruit, when taken between the teeth and broken off, falls into the linen bag. G. W.

An Orchard Ladder.—For large trees (says J. B. Smith in the *New York Tribune*) you want a long light ladder. I made one from Poplar boards 1 inch thick and 12 feet long. It was spliced in the middle, making a ladder 23 feet long. The sides were 4 inches wide at the bottom, 6 inches in the middle, and 3 inches at the top. The ladder is 2½ feet wide at the bottom and 1 foot at the top. The rounds are 1¼ inch square, and the holes in the side pieces ¾ of an inch. One man can raise it from the ground, and it will bear 180 lbs. and a bushel of Apples. It has been in use three years and is a stiff and good ladder, and for its length much the lightest I ever saw.

Clapp's Favourite Pear.—My experience of this Pear has been so successful that I am anxious to record the result. I have now fruited this variety three years, and no other Pear grown this season has given me so much satisfaction. It grows freely, and nothing can equal its dark, vigorous, luxuriant branches, and massive glossy foliage. My trees of it are all standards, now six years from the scion, and some of them have attained large growth. Although I possess an extensive variety of most of the new and choice Pears, I prefer Clapp's Favourite to anything which I have up to this date. No fruit can be more beautiful than Clapp's Favourite when properly ripened. It should be picked as soon as the stem will part readily on lifting gently, and in no case should it be left to colour. I have as yet had none of this Pear for market, but think it must prove a valuable variety for profit, owing to its large and uniformly handsome appearance. It is generally supposed to be a cross between the Flemish Beauty and Williams.—C.

THE GARDENS OF ENGLAND.

GRANGE PARK.

THIS, the seat of Lord Ashburton, is situated about four miles from Alresford, and is one of the finest places in Hampshire. On the south side of the river Itchin, which runs through the park, are the mansion, a noble building in the Grecian style, and the principal flower gardens; and on its north side lie the kitchen gardens and forcing grounds, together with a belt of ornamental ground and shrubberies. On the east side of the mansion, at some distance off, is a wood containing some fine trees, particularly three Cedars of Lebanon, the trunk of one of which measures 13 feet 7 inches in girth at 3 feet from the ground, and that of a second specimen only a trifle less, while the latter has a clean unbranched bole of some 30 feet from the ground. These grow close to the little noisy Itchin, which emerges from this wood under a bridge, built in a rustic manner with flints, and clothed with Ivy. After passing through the bridge, it widens out until it acquires the dimensions of a lake, the water in which, resting as it does on the chalk, is as clear as crystal, and a favourite resort of wild fowl. A pathway winds along near its margin on the north side, and between that and the kitchen garden is a strip of grass lawn, on which are flower-beds and isolated shrubs and small trees. The further side of this lawn is furnished with an arcade made of wire 150 yards in length, with a series of archways in front covered with Roses, Clematises, Jessamines, Ivy, Aristolochia Siphon, Everlasting Peas, and similar plants. This cuts off the ornamental ground from the kitchen garden, and confines the view to the river and the park beyond it. Opposite the mansion the Itchin becomes a lake of considerable size ornamented with islands, thickly planted with trees and shrubs. Here, too, the banks become irregular, occasionally pushing out into the water bold promontories, on one of which nestles a little Rosery. The lake is again gathered up into a rivulet spanned by a bridge made of large boulders, half hid among Ivy; and here a little waterfall has been constructed, the constant murmur of which gives life to the scene. Everywhere occurs fine timber, and the park is studded with lofty Beeches, Limes, and other trees. Near the water's edge is a grand specimen of Pampas Grass, consisting of both male and female plants in one clump. The former has developed over a hundred flower-spikes, and the latter about three dozen. Of flower gardens there are two, formed on terraces near the mansion; one is on Grass, the other Box on gravel; both are in the geometrical style, and each has a basin and fountain in its centre. Umbrella-headed trees and Laurels bound these terraces, and a very large Rosery is about to be formed between the mansion and the water.

The plant-houses, properly so-called, consist of two span-roofed structures placed in the fruit forcing department. One of these structures is 50 feet long and 22 feet wide, and is a light and elegant building, erected by Messrs. Messenger, of Loughborough, two years ago. It is devoted to the growth of stove plants, and the other is an old-fashioned house, used for odds and ends. Poinsettias are cultivated here largely, and are now in the Pine stoves, and Begonias, Pelargoniums, and a few other plants for the decoration of the conservatory are kept for a time in the fruit houses. We observed in a Pine pit a fine example of *Stephanotis floribunda* (eighteen months' old from the cutting) growing in a tub plunged in leaves over a hot-water tank, a situation in which it has thriven so well as to cover the whole roof, and is now blooming profusely. Violets, in addition to being grown in frames, are protected after October, out of doors, with hoops and mats, so as to keep off heavy rains, which are liable to impair their fragrance. The conservatory, which is a large, wide, double span-roofed structure, with an arched passage in the centre, is attached to the mansion, with which it agrees in style. Inside paths surround and intersect it, the intersections being beds containing ornamental plants in great luxuriance. The back wall is covered with a trellis, on which climbers of many kinds are trained; and on the pillars which support the roof, and also in front, and on the roof, this kind of drapery prevails. Here *Tacsonia Van Volkemi* has attained wonderful proportions and is not only flowering profusely, but fruiting freely, the

fruit being considered a valuable addition to the dessert. Variegated Abutilons are now laden with flowers, as are also Passion-flowers, *Plumbago capensis*, and *Cassia floribunda*. No conservatory, indeed, should be without these fine and easily-grown autumn-blooming plants. *Mandevillas*, *Cobæas*, and other soft-wooded climbers, are also much prized on account of their covering bare spaces quickly. *Lapagerias* are planted against the central pillars, and around their base are collars of zinc to prevent woodlice from injuring the young shoots, which otherwise they would be apt to do. The beds were entirely renovated about two years ago, fresh compost being introduced; therefore the plants are now growing freely and even robustly. Here a grand specimen of *Musa Ensete* promises to be a rival to the fine plant that was in the Palm house at Kew, two years ago, and of *Latania barbonica*, *Seaforthia elegans*, and *Tree-Ferns* there are noble specimens, all planted out. Two of these—*Dicksonia antarctica*—have stems about 10 feet high and a foot in diameter, and are surmounted with fine crowns of fronds. Dwarfier plants, too, do equally well; clearly showing that when plants are put out into beds they succeed much better than when kept in pots.

In the indoor fruit department, Pines are grown in half-span houses, lately erected by Messrs. Weeks & Co., of Chelsea. In these the atmospheric heat is supplied by two rows of 4-inch pipes that surround the house within the walls, and for bottom heat a tank is placed under the bed, which is supported on slates. In this tank are two or four rows of 4-inch hot-water pipes, according to the size of the pit or house to be heated. Queens, Smooth-leaved Cayennes, and Black Jamaicas are the varieties grown, the majority consisting of the first two, in every stage, from suckers to fruiting plants; all are grown in pots, 12-inch ones being the size used for fruiting them in, and good turfy loam from the Downs is the soil employed. The pots are plunged in a bed of leaves supported over the hot-water tank by means of slate flags, and they generally receive but one shift from the sucker state to the fruiting stage. A span-roofed pit 12 feet in width, 35 feet in length, and separated into two compartments by a glass partition, is devoted to the growth of Cucumbers and Melons. It is heated like the Pine-pits, and in one division are Melons and in the other Cucumbers. Victory of Bath and Royal Ascot Melons are both grown here; the first of which has the reputation of being the finest green-fleshed sort in cultivation and of being an early-fruiting kind. Several sorts of compost were tried for them, such as selected turf from the Downs, and artificial soils, but none has been found so good as some common soil from a quarter in the kitchen garden. The true Telegraph is the favourite Cucumber for winter and summer fruiting, as it is a certain and prolific cropper, yielding abundance of good medium-sized fruits that are much more useful for household purposes than some of the very large fruits of some of our new and much lauded kinds.

Against the kitchen garden wall, facing southward, is a range of lean-to fruit-houses, in all 300 feet long, divided into six compartments, each 50 feet in length. Three of these divisions are used as Vineries, which are 16 feet wide; two as Peach-houses, 14 feet wide; and the other, which is as wide as the Vineries, is employed as a Fig-house. This range is constructed of iron, with copper sash-bars, and is ventilated on the old principle of opening each sash separately. It was formerly heated by flues; but these have now given place to 4-inch hot-water pipes, nearly 3,000 feet of which are heated most satisfactorily by one of Messrs. Weeks's compensating boilers. The first Vinery has only been lately planted with Black Hamburgs, Foster's Seedling, Buckland Sweetwater, and Duke of Buccleuch, all of which are planted inside; but the roots have communication with the outside border. The inside as well as the outside borders belonging to this Vinery are being re-made piecemeal, so as to prevent over-luxuriance, and to promote fertility. The second Vinery also contains young Vines; but here they are planted between the old ones, so that the latter may be entirely removed as the former come into fruiting condition. This division is entirely devoted to Muscats, among which are Muscat of Alexandria and the Bowood and Canon Hall Muscats. In the third Vinery, which is a late one, is now

hanging a splendid crop of Lady Downe's Grapes, the bunches being large and well finished, and the berries as black as jet, and densely covered with bloom. Mr. Grey informed us that these Grapes keep well in bottles of water during the winter months, but he recommends that they should be thoroughly ripe before being cut from the Vines. This Vine border was entirely renewed last year, and from the promising condition of the young wood satisfactory results may be anticipated.

In the Peach houses, the trees are planted against the back wall and also in front—not, as is generally the case, to be trained on a trellis immediately under the glass, but a little pathway's breadth inward from the hot-water pipes and front shelf. They are then trained on an iron trellis, the upper part of which is bent towards the back wall. Thus the trees on the latter receive sufficient light, as do also the front ones, and on the shelf above the pipes ornamental plants,

remain therein, for some of them have been found 300 yards distant, rambling through the kitchen garden. One of these trees is considerably larger than the other, and covers a space of 630 square feet, and every year both plants, which are Brown Turkeys, produce great crops of Figs. They are generally started about the end of December or first of January for ripe fruit in April, and are consequently now a good deal exposed in order to rest them a little before they are forced. About 3000 plants of Strawberries in pots are annually forced, shelves for their accommodation being erected in the Vineries, Peach and Fig houses, and Pine stoves, and the succession ones are kept in cool frames, of which there are several ranges devoted to plant-growing in summer and Strawberries in winter. French Beans, too, are fruited indoors in the warmer houses, and Osborn's is regarded as the favourite sort.

The kitchen gardens comprise a walled-in square, with an intersecting wall in the middle. The soil of which it consists



Lake View in the Grounds at the Grange, Hampshire.

French Beans, Strawberries, &c., may be grown. Some Peach trees in pots are also grown here, but they are now plunged out-of-doors. Most of the best standard sorts are grown, such as Grosse Mignonne, Late Admirable, Barrington, and Violette Hâtive, in one house, and Royal George and some of the newer sorts in the other. Mr. Grey is of opinion that Early Louise and Early Beatrice, new sorts of Peaches, sent out by Mr. Rivers, Sawbridgeworth, are decidedly the best kinds, and of Rivers's Early Newington Nectarines, too, he speaks very highly. In one of the Peach houses the Guava is ripening a heavy crop of fruit, and it does so annually, with scarcely any trouble; bedding plants, too, are generally wintered in these houses, as when the trees are bare of leaves they do not obstruct light much. The Fig house is the most remarkable in this range. In it are two immense trees planted in an outside border, introduced within like Vines, and trained on a wire trellis up the front of the glass like Peaches. Although a wide border is allotted to their roots they do not entirely

is a light loam, with a good admixture of small flints, resting on a bottom of chalk. Fruit trees do well in it, especially Pears; but as most of the trees are old and worn out, they are being gradually replaced by younger ones. The finest crop of October red and white Raspberries we ever saw we observed here. Vegetables, too, are largely and well grown, and Mr. Grey finds that he gets much better Broccoli when he plants it between Potato rows than when it occupies a space set apart for itself. As to Turnips, he prefers Veitch's Red Globe to all others, on account of its good qualities and quick growth; he, however, also grows the White Stone largely. His finest Brussels Sprouts he has saved from his own seed for the last fifteen years, the seed being originally given to him by a friend who had saved the sort for nearly twenty years previously. The plants are neither so large nor so luxuriant as the produce of bought seed planted alongside of them; but the stems are covered with hard and compact goodly-sized sprouts much superior to the others.

THE HOUSEHOLD.

MUSTARD.

A SHARP controversy has lately been carried on in the columns of the daily press on this subject. Mr. Alfred Newton, of New London Street, excuses the mustard-makers on the ground that "the condiment we call mustard contains an acrid and pungent volatile oil, noxious to the taste, and, unless neutralised in some way, injurious to health. In consequence of the same presence of this oil, mustard composed only of pure mustard flour, after being mixed for use, turns in a short time to a dark brown colour and becomes decomposed and unfit for use. It requires, in fact, to be mixed afresh every day, and this alone forms an objection in the eyes of most consumers, both on account of the inconvenience and the extra expense. To minimise this ill effect, nearly all mustard manufacturers mix a certain proportion of the finest Wheat flour, which helps to absorb the essential oil and has also the effect of enabling the mixed condiment to retain its sweetness and colour, and consequently its useableness, twice as long as the genuine mustard." This statement has elicited a reply from Mr. H. C. Bartlett, the analyst, who says:—"There are two species of mustard—*Sinapis alba* and *Sinapis nigra*. The former contains neither volatile oil nor any substance capable of producing it. White mustard flour, therefore, will dilute any excess of pungency arising from volatile oil without necessitating the addition of any foreign substance." This statement is corroborated by "a mustard-maker" of forty years' standing, who says—"I ask to be heard in favour of the Act which does not allow mustard to be adulterated, knowing that whatever is put into it besides mustard flour injures the quality, and that the use of the "finest Wheat flour" is pure and simple adulteration, and is used entirely by mustard manufacturers for that purpose, and, further, flour cannot be used unless it is coloured by turmeric or some other drug." Dr. Hassall states that the volatile oil is the very essence of mustard; without it the article would be worthless as a condiment, and the addition of Wheat flour does not in a proper sense neutralise it. Furthermore, it is a great exaggeration to say that genuine mustard possesses a noxious taste, it is simply slightly bitter." In reply to this, Mr. Newton says—"Although I am not a chemist, I can assure Dr. Hassall that mustard is improved by the addition of a small proportion of Wheaten flour. I was myself sceptical upon the point until I made a careful trial of the fact, and I have since been strengthened in my opinion by the public statement of an eminent analytical chemist." This is how the matter stands at present.

Dried Currants.—The fruit known as the dried Currant of commerce is (as most people know) not a Currant, but a Grape, and can be grafted successfully upon roots of any of the common varieties of Grapes in the usual mode of root-grafting. It should be known, however, that this variety of Grape—generally seedless—requires for its full and perfect development an abundant supply of moisture in the soil; hence, irrigation is generally resorted to in the growing of this Grape in dry countries. The largest export of these Currants is from the Levant and Grecian Islands, and they are generally considered the best; but Spain, Italy, and southern France export considerable quantities. There are two varieties that are absolutely seedless, and therefore can only be propagated from cuttings, or grafted upon other Vines; these are the Chevelue and the Black Corinth. It is asserted, however, that in France these varieties, from some effect of climate or culture, sometimes produce seeds; but the best always are seedless.

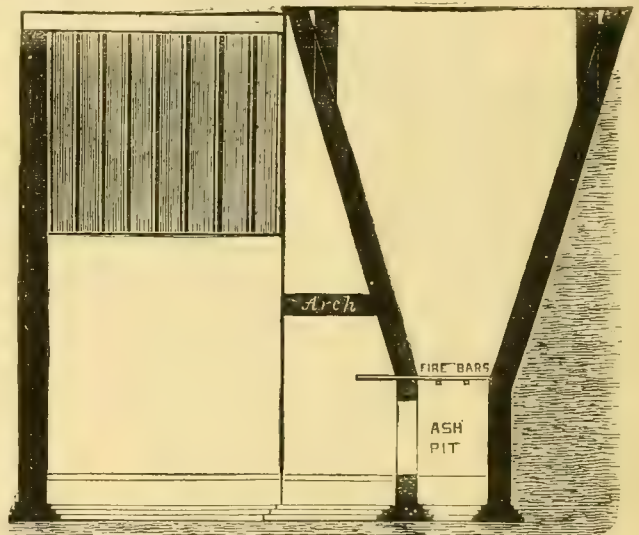
A Tea Plantation.—This is a very pretty sight; when seen at a distance it looks like a shrubbery of evergreens, the leaves of the plant being of a rich dark green. Green Tea is multiplied by seeds which are ripe in October; when gathered they are put into a basket and mixed with sand and earth in a damp state, and kept in this condition till spring. In March the seeds are taken from the basket and placed in the ground. They are sown thickly in rows in some spare corner of the Tea farm. After picking, green leaves are spread out thickly on flat Bamboo twigs to get rid of their moisture; they are then placed in roasting-pans, and rapidly moved about and shaken up with both hands. When affected by the heat and flaccid they are placed on a rolling table. Several men then roll the balls to get rid of the moisture and twist the leaves. They are then shaken out on flat trays, after which they are taken to the roasting-pan and thrown in again. The second part of the process consists in winnowing the Tea through sieves in order to get rid of dust, and to divide the Tea into "Gunpowder," "Hyson," "Twankay," &c. The process of curing Black Tea is about the same, only the leaves are permitted to lie longer after picking, and are tossed in the air and beaten by the hands. The Chinese never colour Teas for themselves. It is entirely done for the foreign market.

ORDINARY AND IMPROVED LIME-KILNS.

As the application of the process of lime-burning to the economical heating of plant-houses has recently attracted much attention, and as some residents in limestone districts, who may be induced to adopt it, may feel disposed to further utilise the material within their reach, by the production of lime on a larger scale for cultural and other purposes, we have thought that it may be not inopportune to re-produce some instructive remarks on the subject contained in a Prize Essay by Mr. Charles Turner, C.E., originally published in the *Journal of the Royal Agricultural Society*.

The Common Perpetual Kiln.

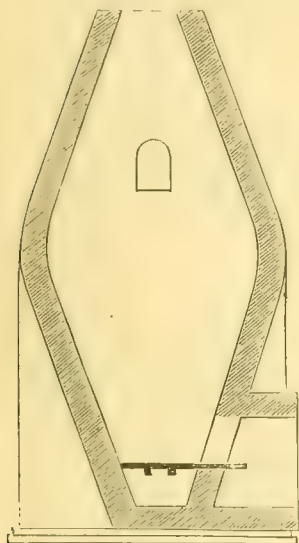
"A kiln for burning lime, for agricultural purposes, is generally placed in the side of a chalk or limestone hill, to avoid expense in brickwork or masonry. The kiln itself, in its cheapest form, is an inverted truncated cone from 12 to 15 feet in diameter at the top, excavated out of the chalk or limestone rock, and lined on the inside with good hard bricks, capable of withstanding a considerable amount of fire. The lining should be from $1\frac{1}{2}$ to 2 bricks thick, according to the size of the kiln, and filled in solidly at the back with hard chalk or limestone, set in mortar. In the best kilns of this construction, the side walls are built upright for about 4 feet in depth, and then the cone is gradually tapered off to a diameter of 3 feet at the draught or draw-hole. The height of the cone is generally equal to the diameter at the top. An arched opening is constructed in the exterior wall in front of the ash-pit, which should



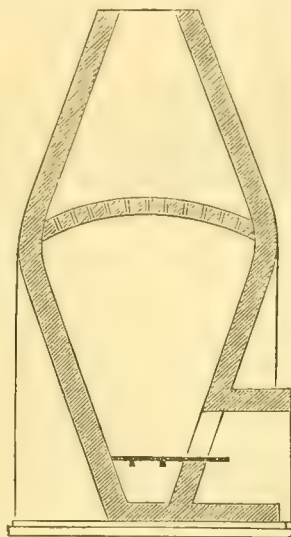
Section of Common Perpetual Kiln with central furnace.

be sufficiently high to allow of a man standing upright, in order that he may get conveniently at the ends of the fire-bars when the lime is required to be drawn. Two strong cast-iron bars, called bearing-bars, 3 inches by $2\frac{1}{2}$ inches, are fixed into the brickwork in such a manner that they can readily be withdrawn when required; upon them lie the wrought-iron fire-bars (which should be circular in section, for a reason which I will afterwards explain) $1\frac{1}{2}$ inch diameter, with a space of about 1 inch between them. They should be formed with blunt points at one end, and the middle bars should have an eye at the other end, so as to enable a crowbar to be passed through them. It is better to make the middle bars about 1 foot 6 inches longer than the opening they have to cover, in order to attain a firmer hold of them when they require to be withdrawn. An opening should be left in the front wall of the kiln immediately above the fire-bars, which should be supported by a strong wrought-iron frame, 3 inches wide, securely built into the brickwork. This opening is for the purpose of gaining access to the interior of the kiln, in order to light the fire or to assist in removing the lime when it wedges itself together in a mass, and will not pass down through the fire-bars in the usual way. To start the kiln, a fire is lighted on the fire-bars, and, as soon as it burns briskly enough, the hole already described is securely bricked up, and the fire fed with lumps of coal from the circular platform round the top of the kiln. When the fire is sufficiently ignited, lumps of chalk or limestone are, in like manner, thrown upon the fire, to a thickness of about 12 inches; and, as soon as the fire appears to burn well through this layer, a layer of coal, and, shortly

afterwards, another layer of chalk or limestone, are added; and, if the fire continues to burn well, the whole kiln may be filled with alternate layers of chalk or limestone and coal. The proportion of coal to be used must be determined by trial, as it differs according to the nature of the material, the size of the lumps, and the sort of coal used. On the average, chalk will burn if the proportions are 1 of coal to 7 of chalk; but, for limestone, they vary from 1 to $1\frac{1}{2}$ of coal to 6 of limestone. When once the kiln is set properly going, it ought not to require any re-kindling, but to continue in operation for months together, by supplying fresh materials at the top of the kiln as the lime is drawn away at the bottom. The kiln is usually drawn once every twenty-four hours, by drawing out the middle fire-bars; and, as it is sometimes a difficult matter to start them, owing to the pressure, it is better to make them circular in section, so that, by introducing a crowbar through the eyes at the ends, they can readily be turned round, and partly freed from the pressure. If the lime does not fall out easily, it can be loosened by a bar, with the end turned up, which is introduced between the fire-bars and drawn backwards and forwards; or a few of the bricks can be withdrawn from the opening above mentioned for lighting the fire, and the lime forced down with a heavy bar. The lime is then drawn to the front of the archway with an iron hoe, and left till it is cool enough to be measured and run into the store-shed or carted away. The drawing being completed, the fire-bars are driven back again



Section of Common Perpetual Kiln, with Shaft of inverted truncated cone.



Section of Common Perpetual Kiln, with inner crown.

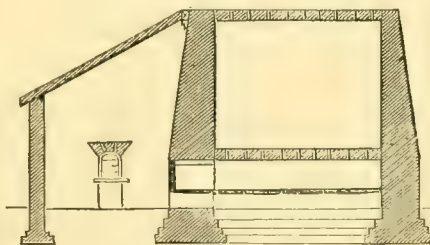
into their places and left for another twenty-four hours, during which time the filling is continued on the top, as above mentioned. For this purpose it is desirable for the kiln to be so placed that a tramway may be laid over the top, or along one side of it—preferably the latter, as it gives more opportunity for properly spreading the alternate layers of coal and calcareous material. It is better also to have a broad platform round the top of the kiln, to give room for depositing a quantity of coal, as it can seldom be unloaded direct from the truck.

Some kilns have been constructed with an inverted truncated cone placed, by way of a shaft, upon the under cone, in order to retain the heat, and an arched opening in the outer wall for the purpose of feeding the kiln. From experience obtained in carrying out the same principle with brick-kilns, I am of opinion that very little advantage is gained by such an arrangement, unless an inner flat crown, pierced with holes, is also constructed upon the under cone before the upper cone is carried up. It would, however, be extremely expensive, and, in fact, almost impossible, to carry out the proper system of loading a kiln of this description with such an arrangement. Kilns have also been constructed of an elliptical instead of a conical section, or, to speak more correctly, of an egg section with the two ends cut off. This section has no doubt some advantages, as it conducts the heat better to the top of the kiln, and also, to some extent, assists the descent of the lime; but it necessitates the construction of two draught-holes, one at each end of the ellipse, which are not always easy to arrange when the kiln is built in the side of a hill. The same object may be obtained by constructing the upper part of the internal walls perpendicular, as above mentioned, and

slightly diminishing the inclination of the cone just above the fire-bars. The advantages of the common perpetual kiln may be stated to be:—1. The simplicity and economy of its construction. 2. The small amount of skilled labour required in managing it, as, after the proportion of fuel to material has been once ascertained, the subsequent working is merely a matter of rule. 3. The saving of fuel, by the kiln being kept constantly hot. 4. The man who attends to the kiln is only required to spend a portion of his time, and can in the interim attend to other business. The disadvantages are:—1. The difficulty of calcining the lime sufficiently without a great additional expenditure of fuel. 2. The impossibility of using wood fuel for the purpose. 3. From the nature and construction of the kiln, it is only applicable when a large quantity of lime is constantly required. 4. That in agricultural districts some portion of the lime is generally required for building purposes, and that lime burnt in this manner is generally not well suited for such purposes, as it usually contains cinders and other refuse from the coal. I have found in practice that it is better, instead of merely trusting to a brick lining to the conical hole cut in the chalk or limestone, to build five counterforts round the kilns and to fill in the spaces between them with lumps of chalk or limestone built in mortar, as, unless the hill is of an unusually solid character and impervious to water, the conical brick lining is very apt to expand and crack with the heat.

The Intermittent Kiln.

In this description of kiln the fuel is not mixed with the material used, but is placed in a furnace either at the side or bottom of the kiln, and always laid upon a grating of fixed fire-bars, being replenished from time to time, until the whole of the material in the kiln has been properly calcined. As soon as the kiln arrives at this state, it is allowed to cool down gradually, and the whole of the charge is withdrawn when it is cool enough to handle. These kilns are built of various forms, and are generally, like the "Perpetual Kilns," constructed, if possible, on the side of a hill. They are most commonly rectangular, similar to the "Brick Kiln," about 14 feet wide, 12 feet deep, and from 9 to 10 feet high, internally, from the floor to the top. The walls should be 3 feet thick, lined on the inside with fire-brick. The outer wall need not be solid, but may be constructed with 3-foot buttresses in brickwork, an 18-inch lining on the inside, and the space in the outside between the buttresses filled in solidly with lumps of chalk or limestone set in mortar. Three fire-holes are constructed from front to back of the kiln, 1 foot 6 inches wide, 1 foot 6 inches high from the bottom of the ashpit to the under side of the bearing bars, and 1 foot 9 inches high from the top of the bearing-bar to the under side of the arch. The bearing-bars should be of cast-iron, 3 inches square, and 1 foot 6 inches apart from centre to centre. The fire-bars should be 3 feet long, $2\frac{1}{2} \times 1\frac{1}{2}$, and $\frac{3}{4}$ inch apart. There should be a cast-iron door fitted into a wrought-iron frame 3 inches wide, to close the mouth of the fire-holes. The arch over the fire-holes should be 9 inches thick, with holes left at the top and sides at intervals of 14 inches, 3 inches wide, $4\frac{1}{2}$ inches long on the inside of the arch, spreading as they approach the floor of the kiln. Other courses of open work are built on the top of these holes, so as to convert the floor of the kiln into a chequer of holes with $4\frac{1}{2}$ -inch work between them. The kiln is filled by packing lumps of chalk or limestone over the floor, taking care to leave as wide spaces as possible over the holes, so that the fire may draw well through the mass. These courses



Section of Intermittent Kiln.

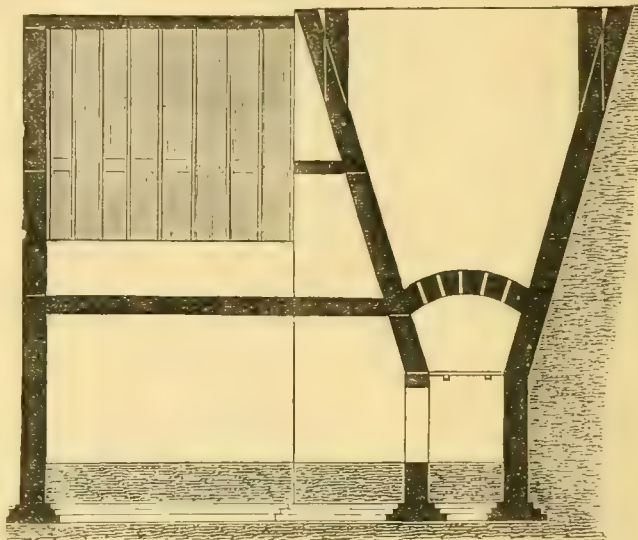
should be about 6 inches thick at the bottom, diminishing to 4 inches after five or six courses have been laid; when the kiln is about two-thirds full, the remainder of the charge may be tipped in from the top, and spread over the surface. A kiln of this size requires about thirty-six hours to get to the full heat, twelve or fourteen hours full heat, and thirty-six hours to cool down before the lime can be drawn. It is better to cover over the top of the kiln with two courses of burned bricks, leaving sufficient draught-holes for the heat to escape; but with every precaution it is scarcely possible to burn the uppermost 12 inches of the charge to the proper pitch, and

it is usually burnt over again in the next kiln. A better form for this description of kiln is, in my opinion, one similar in section and size to the "Perpetual Kiln," making use of a circular open grating, cast in segments as a fire-grate, for one central furnace domed over to form the floor of the kiln, with brickwork 9 inches thick springing 15 inches above the fire-grate and rising 1 foot 9 inches. The furnace should be 3 feet diameter at the top of the fire-grate; and the dome or the floor should be pierced with radiating holes, $4\frac{1}{2}$ inches by 3 inches, to allow the fire to pass through. The bricks would be required to be made on purpose, and should all be laid heading. The kiln should be filled and packed in the same manner as that last mentioned, and covered over on the top with two courses of burnt bricks in a similar manner. I have never tried a kiln constructed in this manner; but I feel sure that it would answer well, and I think it would save one-third of the fuel, as compared with the last-mentioned kiln, besides burning the lime much more evenly. Both of the last described kilns may be roofed or domed over, but in both cases the expenditure would be very much greater, without, as far as I can see, any corresponding advantage; and the labour of filling the kiln would be very much increased. If the kiln is built entirely into the side of a hill, it is necessary to construct a floor over the kiln-pit to form an approach to the hatchway; and, if this floor is roofed over, it will form a dry and commodious lime store. Wood fuel may be used instead of coal in these kilns, and when used it is not necessary to have any fire-grate, as the wood fuel requires but very little draught. The advantages of this description of kiln may be stated to be:—1. That the whole of the lime, with a very small exception, is thoroughly calcined. 2. That no stones, cinders, or other impurities are found mixed up with the lime. 3. That, if the kiln described, with the central fire, is used, the saving of fuel will be fully one-fourth over the best "Perpetual Kiln." The disadvantages are:—1. That the upper 1 foot 6 inches of the lime can never be properly calcined. 2. That the labour of setting, burning, and drawing these kilns is considerably greater, and, therefore, more expensive than that required for the perpetual kilns. 3. That when a large and constant supply of lime is required, the quantity produced is very much less than by the perpetual kilns. 4. That the cost of building these kilns properly is considerably greater than that of the perpetual kilns.

The Intermittent or Perpetual Kiln.

The third description of kiln used in lime-burning is one much less generally known than the two already described. Properly speaking it is a perpetual kiln, but it is heated by furnaces from beneath. It can be most advantageously used as a perpetual kiln, by supplying the material to be calcined at the top, and withdrawing it at the bottom; but, in a form I will describe, it may also be used as an "Intermittent Kiln" by filling the kiln, and withdrawing the charge, when the burning is completed, altogether through the hatchway. These kilns cannot be built in the side of a hill, but they must be so constructed as to be accessible on all sides. They usually have a circular or hexagonal shaft in the centre, from 40 to 60 feet in height, varying from 7 feet to 10 feet in diameter, and tapering from the top to the middle, and again from the middle to the fire-grate. From three to five furnaces are constructed round the outside of the shaft, the fire-grates, which are generally constructed of perforated fire-tiles, being made sufficiently large to span from wall to wall, or being supported on iron bearers. The fire passes out of the furnace through a hole in the end wall into the centre shaft. The withdrawing holes, or hatchways, are situated between and below the ash-pits of the fire-holes, and are closed by cast-iron doors to prevent unnecessary cooling of the kiln. The floor to the fire-chamber forms the roof to the withdrawing floors. The hatchways are widened from the centre towards the outside, and are also inclined outwards to facilitate the withdrawal of the lime. Iron doors are made in the ash-pits, through which the ashes are allowed to fall on the floor on which the lime is withdrawn. Ventilating pipes should be carried from this floor, through the firing-chamber, to relieve the workmen from the great heat while the lime is being withdrawn. The fuel used in these kilns is wood, 1 lb. being required to burn 3 lbs. of lime; but coal is also used in the variety of kiln possessing a combustion chamber. The kiln is charged by filling it with lime up to the height of the draught-holes, in which the fire is lighted and kept burning, and when this charge is thoroughly burnt through, the kiln is completely filled, the limestone being first packed in courses and then thrown in from the top. The fire is then drawn back from the draught-holes on to the fire-grates, and the work of the kiln proceeds, the limestone being thrown in from the top, and withdrawn from the bottom when burnt. These kilns are usually drawn every twelve hours, a similar lapse of time being required to enable the lime to cool down sufficiently to allow it to be removed. They are sometimes constructed with one fire-grate and a combustion chamber, where a considerable amount

of air is supplied by draught-holes behind the bridge, and the fire is brought to a very great intensity before it enters the shaft of the kiln. In some kilns the withdrawing floor for the lime is constructed at such a level that a railway truck can pass underneath it to be loaded with lime. In all cases it is necessary to construct a bridge, with a tramway laid upon it from the chalk or limestone hill to the top of the shaft, to supply the materials to the kilns; and a good road should be formed, at the level of the withdrawing floor, to

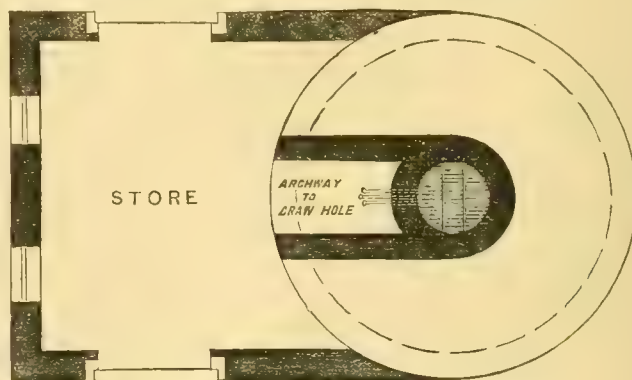


Section of Circular Intermittent Kiln with central furnace.

convey away the lime and ashes, and to bring in the fuel, which can be raised by a simple lift to the floor above.

Improved Perpetual Kiln.

I will now describe a kiln of my own invention, not specially designed for the purpose of burning lime, but for the purpose of drying clay previously to grinding for fire brickmaking. A few slight modifications, however, will adapt it to the purpose of lime-burning, and I will describe it with such alterations. It will be seen that it answers to the sort of kiln I referred to in commencing the description of the perpetual kilns heated by fires from beneath; and that it can either be used as a perpetual kiln, from which a large and continuous supply of lime can be drawn, or as a perpetual kiln with a moderate supply, or, in like manner, as an intermittent kiln, from which either a large or moderate charge can be drawn. The form



Plan of Circular Intermittent Kiln with central furnace.

and dimensions are particularly shown in Figs. pp. 365 and 366. The kiln is of a rectangular form, with angular buttresses at the quoins and centre buttresses at the ends; the chimney-flues form the buttresses at the sides, and the end buttresses support the roof of the kiln-pit, with archways through them on one side leading to the lime-store; this extends along the one side of the kiln, with sliding-doors in the centre to allow a cart to back inside it to load in the dry. The other side of the kiln is occupied by the approach road, or tramway, from the chalk or limestone kiln, and the kiln-pits extend across both ends. The width of the kiln depends upon the number

of fire-holes, e.g., a three-hole kiln requires to be 17 feet 6 inches wide. It should never be more than 13 feet 6 inches deep, as it is inconvenient to draw the fire-bars if they are more than 4 feet long. The height of the kiln should be from 7 feet 6 inches to 9 feet above the fire-grate. The walls should be 2 feet 3 inches thick, and should be held together by two wrought-iron bands with adjustable couplings. It will be seen, from the figure below, that for a three-hole kiln there are four withdrawing-holes, situated between the fire-holes. The fire-grates for the fire-holes are constructed with cast-iron, rectangular, fish-bellied fire-bars, resting on bearing-bars as in the fire-grates for the intermittent kilns before described. The withdrawing holes are constructed of wrought-iron circular fire-bars, $1\frac{1}{4}$ inch diameter, 1 foot apart, resting on cast-iron bearing-bars, which, except the centre ones, are parallel, and on which are cast a series of lugs perforated with circular holes through which the fire-bars pass, and are guided in withdrawing them and driving them back. In front of the outer bar is also a cast-iron plate, supported on brackets, on which the fire-bars rest when drawn forward. The openings to the fire-holes and the withdrawing holes are closed by double cast-iron doors, hung in wrought-iron frames. Cast-iron skew-back plates are laid upon the walls separating the fire-holes and withdrawing holes, to prevent the spreading of the fire-lumps which cover the fire-holes. These lumps are formed in one piece, $30 \times 18 \times 4$ inches, with half-circular holes 2 inches diameter on their edges, so as to form draught-holes 2 inches diameter when jointed together. Each lump is either formed with a tenon or a mortice at the end, so that they may joint securely together when fixed in place. The centre flue is covered with fire-lumps in a similar manner, except

that the lumps are of larger size. The ends open into the chimney-flues, which are 2 feet square at the bottom and 2 feet 3 inches square at the top. The skiveplates are 2 feet 6 inches square, and the chain attached to the skiveplate lever is carried over a roller in the kiln-pit, and is so arranged that the skiveplate can be opened or closed at either end of the kiln. The kiln is lined with fire-brick, 9 inches thick, for 4 feet above the fire-bars, and the whole of the work about the fire-holes is built with fire-brick. The kiln-pits should

be constructed with lean-to roofs, with louvre openings at the highest part to let out the heat while the lime is being drawn. A T iron bar should be carried across the pits, supported at both ends; on this a double roller runs backwards and forwards, carrying a link at the end of the spindle and terminating in a hook, from which is suspended an iron-wire basket, into which the lime is loaded to remove it to the store. The basket is drawn backwards by an endless line, and would be arranged to tip itself in passing over the partition between the kiln-pit and the store-shed. A similar bar and travelling carriage would also be used for loading the carts from the store-shed. The kiln is set in a similar manner to a perpetual kiln, more limestone or chalk being added at the top to replace the burnt lime, which is continually withdrawn at the bottom. It may also be set and burnt as an intermittent kiln, the whole charge being withdrawn by the hatchway at one time. Either a large or small constant supply may be withdrawn from the kiln, when acting as a perpetual kiln, by regulating the fires. The kiln can be kept going very steadily for many hours, or even days, by light stoking, opening the skives only a small distance and closing them as soon as the smoke has burned off; or by frequent heavy stokings, opening the skives wide, and keeping them open for a short time after the smoke has burned off. The fires may be raised from a low red heat to a heat sufficient to calcine lime in a very few hours. The kiln may be drawn every six, twelve, twenty-four, or thirty-six hours, and the lime will take twelve hours to cool before it can be removed or stored. The proportion of fuel consumed to lime produced would be, as nearly as I can calculate, as one to ten for chalk lime, and one to seven for stone lime. The advantages of this form of kiln would be:—1. That all the lime would be thoroughly

calcined. 2. That no dirt or cinders would be found amongst it. 3. The easy way of regulating the fires, and the quantity of lime to be produced in a given time. 4. The probable large economy of fuel. The disadvantages, as compared with a common perpetual kiln, would be:—1. The increased cost of the first erection, though this would be very small as compared with other perpetual kilns heated from the bottom. 2. The extra trouble and time required in attending upon the fires.

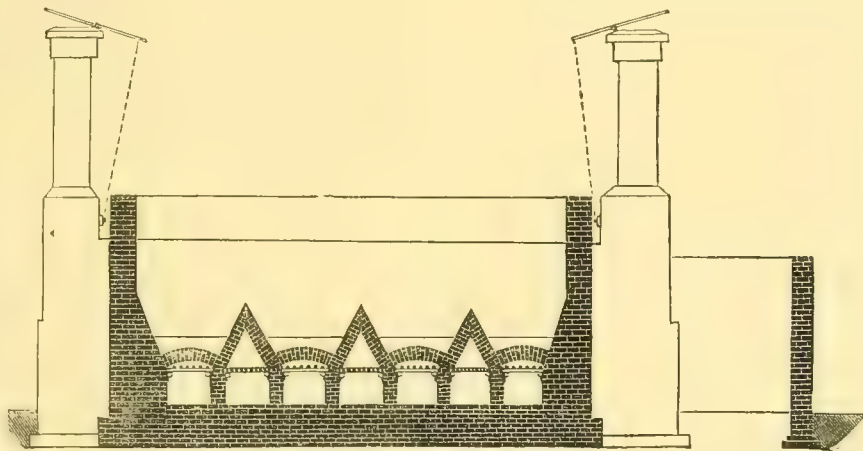
I have completed my description of the various sorts of kilns applicable for burning lime for agricultural purposes, and have only to draw attention to one or two of the chief points in connection with the application of the lime to the land, so as to give agriculturists the means of calculating the cost, and thus enable them to decide whether it would be better for them to purchase the lime, or to construct kilns for burning lime for themselves. These points are, 1st., and by far of the greatest importance, the description of material yielded by the various lime districts, the weight per bushel, the number of cubic feet per ton, the proportion of lime produced to fuel consumed, the price per bushel at the nearest station, and other useful items. 2nd. The best way of slaking lime for agricultural purposes, which would be best ascertained by instituting a course of experiments in different districts. I think it is perfectly clear that there should be an arrangement for slaking lime in connection with every agricultural lime-kiln. As far as my experience goes, the water should not be thrown in quantities over the lime, but the lime should be placed in baskets, and dipped into a reservoir of water, allowing sufficient time for it to take up as much water as it can absorb, which experience will soon decide. It should

then be removed, emptied out upon a dry bed, and carefully covered over, so as to exclude the air. 3rd. It would be very desirable also to decide, by a course of experiments, the best way of applying the slaked lime to the land. I think that the lime should be in a state of powder, but not sufficiently dry to fly about; that it should be placed in a hopper carried upon suitable wheels, the hopper having a communication with a cylinder pierced with holes in the upper part. These holes should be made adjustable in size, and

suitable wings or guides should be fixed on the outside of the cylinder to distribute the lime. A fan, fixed to revolve in this cylinder, turned by the revolution of the carrying wheels, would, in revolving, blow the lime-dust through the holes in the circumference of the cylinder.

The Pottery Tree.—Among the many vegetable products of Brazil, the Pottery tree of Para is not the least worthy of note. This tree, the *Moquilea utilis* of botanists, attains a height of 100 feet up to the lowest branches. The stem is very slender, seldom much exceeding 1 foot in diameter at the base. The wood is very hard and contains a very large amount of silica—not so much, however, as the bark, which is largely employed as a source of silica in the manufacture of pottery. In preparing the bark for the potter's use, it is first burned, and the residue is then pulverised and mixed with clay in varying proportions. With an equal quantity of the two ingredients a superior quality of ware is produced. It is very durable, and will bear almost any amount of heat. The natives employ it for all manner of culinary purposes. When fresh the bark cuts like soft sandstone, and the presence of the silicx may be readily ascertained by grinding a piece of the bark between the teeth. When dry it is generally brittle, though sometimes hard to break. After being burned, if of good quality it cannot be broken up between the fingers, a pestle and mortar being required to crush it.

A CALIFORNIAN journal states that "wherever the Eucalyptus, or Blue Gum, has been planted out in forest form, not only the gopher but the squirrel find it to their interest, comfort, or health to entirely vacate the grounds, abandoning their old and favourite haunts and burrowing grounds, for hillsides and pastures new."



Section of Improved Perpetual Kiln.

THE ARBORETUM.

OLD CORK TREE AT LINTON PARK.

THE following are some particulars respecting the large Cork tree at this place, to which allusion was made in *THE GARDEN* some time since (see p. 357, Vol. III.). It is understood to have been planted between 1770 and 1780, and is therefore from 90 to 100 years old. Its site is about half way down a ridge of considerable elevation, and its position is nearly 300 feet above sea level, and about half that height above the valley below. The soil in which it grows would not be regarded as remarkably good for tillage purposes, but the subsoil seems well adapted for the growth of most kinds of trees, as their roots descend into it to a great depth. The stone shatter of which it consists is calcareous; in fact, it may be said to be decomposed Kentish rag, or in other words, limestone, although but little hard stone is found near the surface, and most Pines and many deciduous trees thrive remarkably well in it. The bole of the tree in question rises perfectly straight for upwards of 9 feet, where it breaks up into five main limbs; one of them, rising in the centre, may be said to continue the bole some 10 or 12 feet higher, only it is not larger than the other limbs. The girth of the bole, taken at 5 feet from the ground, is 9 feet, and this, be it understood, is at its smallest part, which may be called the waist of the tree. The total height is 51 feet; the top is spreading, which gives the tree a sort of irregular balloon outline, the lower branches hanging within 5 feet of the ground; the extreme diameter of the head is 59 feet one way, and 51 feet the other. The tree is much alike on all sides, upright and uniform, and well clothed with foliage, through which the deeply furrowed bark of the limbs shows to great advantage; its colour is a bright ashy grey, some of the inner recesses of the wrinkles being stained with black. I believe the bark would be regarded as very good in the market, but of course it is not meddled with. It has, however, all the elasticity of good cork, with not more than the usual number of rusty places, a fault to which I am told all cork is subject; certainly its deeply-furrowed appearance would entitle it to attention, even if it were not cork, for its appearance differs from that of all other trees with which I am acquainted, the wrinkles being more acutely pointed than those of the Elm or Maple, while its paler colour also enhances its beauty. The foliage is perhaps not so hardy as that of the ordinary evergreen Oak, and during June and July its appearance is less inviting, but later in the year it quite rivals that of evergreen Oaks in point of colour. The Acorns which it bears are about the usual size of those of the evergreen Oak, and several plants raised from them here look healthy and promising. I am not, however, sure but that its proximity to a male tree of the latter kind may render its progeny hybrids, but they are not yet far enough advanced to speak on this point with certainty. The tree itself cannot well be improved in appearance, and it is one I would strongly recommend to be planted where a suitable site for it is available. I may add, moreover, that the one here is sheltered from the north wind by some higher trees, and that it is also protected in like manner by other trees in other directions, but it stands clear of them all. By way of showing how well the character of the ground suits the growth of trees, I may mention that near it is a Cedar of Lebanon, 60 feet high, with a spread of branches touching the ground of upwards of 50 feet, though only planted forty years ago; a Copper Beech, too, somewhat older, has a bole $11\frac{1}{2}$ feet in circumference, and a spread of branches of 66 feet one way and 72 the other, its height being upwards of 60 feet.

J. ROBSON.

THE TREES IN KENSINGTON GARDENS.

THE sad condition of the trees in this invaluable extra-urban forest has been alluded to in *THE GARDEN*, but is becoming worse every recurring season; so that we are induced to ask, is there no arborist or woodreeve to stop the waste and decay which are now a disgrace to the authorities in control of this royal domain? Originally planted too close, the noble forest trees now interlace their branches, and, having expended their force in shooting upwards, have become stalky and dead at the top. In some of the outer boundaries there are certainly many beautiful

trees standing in the open sward, fully grown and expanded; and along the admirable and much-frequented flower-walk many stately trees have attained a graceful expansion, but the great central masses of wood exhibit only bare poles, with a few straggling branches and withering top-shoots, several being broken down and decaying from having been planted too closely. Surely many of these deformed poles ought to be cleared away, to leave room for the more healthy standards to vegetate freely, and feather out in more graceful foliage. Forest trees cannot assume graceful proportions when their branches are intermixed, standing at, say, 10 feet apart, some of them being only 6 feet, 5 feet, and even 4 feet! The clearance of some hundreds of these stems would yield a considerable profit, whilst it would open a way to the healthy growth and expansion of the survivors. In this vastly extended and still growing metropolis the value of such public parks, gardens, and liberties cannot be over-estimated; and if a small share of the outlay upon rangers, keepers, and servitors were dedicated to the improvement and embellishment of these long-neglected woodlands, it would confer a great boon upon the public, and conduce to the healthy enjoyment of extensive woodlands, which cannot be traversed in winter, and, in their present state, are neither healthy nor attractive.—*The Builder*.

Forests in Germany.—Few people have any idea of the extent of forest land in Germany, and most imagine that of the Black Forest little is left except a tradition and a conventional blister of woodland, so named. On the contrary, in Hanover alone there are 900,000 acres of wood under State management, while nearly a fourth part of the area of Prussia is in forest, although half of that is in private hands. As is well known, the forest administration in particular districts has long been famous, especially in Thuringia and the Hartz mountains. In North Germany generally the responsibilities are allotted in districts among a carefully organized body of officers, presided over by a forest director. The appointments are fairly remunerated, and they are so eagerly sought after that candidates will remain on probation for years at their own cost, or with moderate and precarious pay, in the hope of securing a place in the corps at last.

Tree-Growing in Kansas.—Tree culture has no necessary connection with church-building, but an enterprising Episcopal minister in Kansas proposes to make the growing of trees pay for the erection of a church edifice. The general government grants a quarter of a section of land to any one who will plant forty acres of it in trees, and keep them successfully growing for ten years; after fruit trees have been planted three years, and are growing healthily, the State of Kansas pays an annual bounty of two dollars an acre for twenty-five years. By the combination of these two bounties, land could be taken up, and an annual revenue produced sufficient in time, so the projector argues, to pay for a church, and leave a fine surplus of real estate besides. The plan is novel, certainly, but the tree-growing and the church-building would be alike public benefits.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Jasmin americana.—This shrub, which is closely allied to the Hydrangeas, is now in flower here, and, when it gets large, I think it will make a pretty bush.—H. N. ELLACOMBE, *Bilton Rectory, Bristol*.

Lime as a Preservative of Wood.—A writer in *Chambers's Journal* says that certain facts have been made known which show that lime is a good preserver of timber. Ships and barges used for the transport of lime last longer than others. A small coasting schooner, laden with lime, was cast ashore and sunk. She was raised and set afloat once more, and remained sound for thirty years. Again, a platform of nine planks was used to mix water on during three generations; then, being no longer required, was neglected, and at length hidden by Grass that grew over it. Sixty years afterwards, on clearing the ground, it was discovered sound and well-preserved.

The Scotch Fir on Mont Blanc.—A Scotch gentleman having ascended Mont Blanc, in writing an account of his adventure to a friend in Banff, says:—"Did I tell you that up on the side of Mont Blanc, at the topmost limit of all vegetation, where the constant snow and ice reign supreme above, I was pleased and proud to see, highest of all, and next to the very ice, a stubborn Scotch Fir, 'moored in the rifted rock, proof to the tempest's shock,' but with no Clan Alpine to rejoice in its shade, and not much shade did it give, for, brave as it was, it had a hard struggle for existence, and its foliage was of the scantiest. Not many yards further down grew the bonny Bluebell and the Blueberry."

Large Maiden-hair Tree (Salisburia adiantifolia).—In a recent run through Dorsetshire, I visited the beautiful park attached to the castle at Sherborne, the seat of G. Q. W. Digby, Esq. The magnificent timber trees which it contained proved a rich treat to me, but, to single out one before the others, I must say that the *Salisburia adiantifolia* alone was worth a trip into Dorsetshire to see. The following are its dimensions, as obtained from the gardener, Mr. Pragnell:—Height, 68 feet; width (about half way up through the branches), 50 feet; trunk, 4 feet from the ground, 7 feet 7 inches in circumference. When visiting Sherborne I would advise all lovers of hardy plants and shrubs to run on to Leweston, where the more recently introduced and best Conifers have been largely planted, and are to be seen in full beauty.—A. V.

PEAT FUEL.

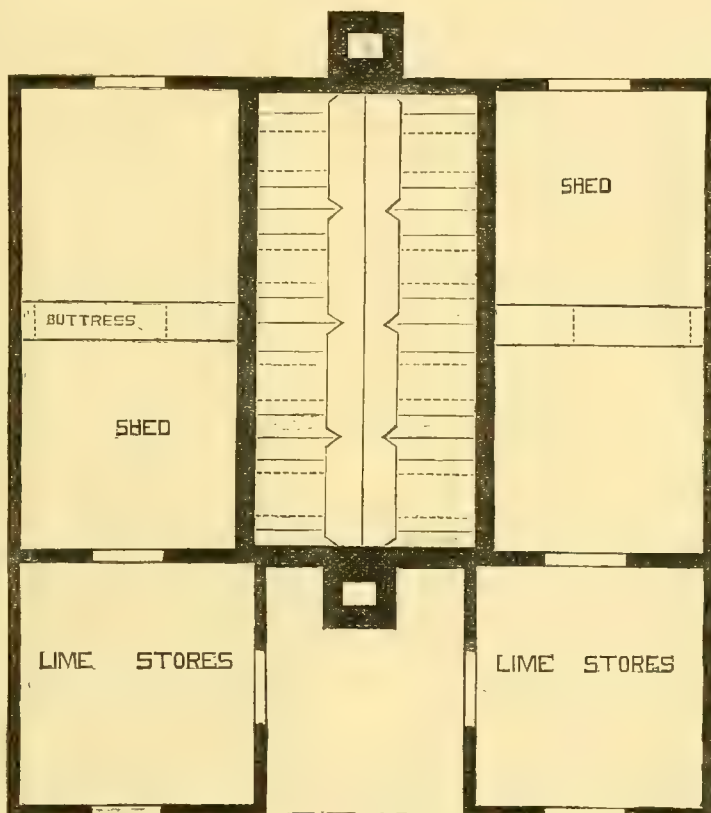
WITHOUT discussing either with Sir William Armstrong or others the probabilities of any approaching exhaustion of our coal-fields, I contend, and am profoundly convinced, that both for that event and for excessive dearness we have an efficient remedy in our literally inexhaustible supplies of peat. You may smile at the suggestion as a trite one, and I admit that in some respects it possesses no novelty. I further admit that the result of several of the experiments for the preparation and mercantile utilization of peat as a substitute for coal has not been encouraging to those who have not followed the matter up closely. But it has been shown that the cause of the comparative—and only comparative—non-success has been the defectiveness of appliances and unskilfulness of manipulation. Peat can be so prepared as, both for economy and convenience, to form—for various domestic and manufacturing uses—a superior substitute for coal. Our peat bogs contain

sources of profit so readily available that to ignorance alone must be attributed the fact that in this country they are permitted to remain undeveloped. "The importance of this dormant source of wealth may easily be made apparent, now that coals are selling at between 40s. and 50s. per ton. The peat bogs of the United Kingdom are estimated at six millions of acres. Up to the present time they have been regarded as almost waste land, yet nearly every acre is capable of yielding large quantities of good peat coal. This coal, the Peat Coal, and Charcoal Company, by Monsieur Challeton de Brugah's* patent, is reported to be making at 8s. a ton. The Somersetshire Peat Coal Company, by Mr. Alloway's patent, state that it can be made at 5s. a ton. The Peat Engineering and Sewage Filtration Company, of Horwich, in Lancashire, undertake to establish works in any part of the kingdom, on contract, and guarantee that the cost of producing excellent peat coal shall not exceed 4s. 6d. per ton;

while Mr. Box, the engineer, says it can be made by his patent at 2s. 8d. per ton. Such being the facts of the case as regards manufacture it only remains for the railway companies to aid this movement for cheapening fuel, and the days of dear coal are numbered. Sir Edward Watkin, whom you may remember as chairman of the Manchester, Sheffield, and Lincolnshire, the South Eastern, and Metropolitan Railways, has already set a good example by stating that he will so far encourage the manufacture of peat coal by conveying it for ten years at a farthing a ton per mile. If this plan be adopted by other railways, there is no reason why our coal bills should not be reduced fifty per cent. at least during the coming and future years. Specimens of some of this peat coal are before you, and those who require further information may obtain it in the Exhibition Department, where some of the manufacturers of peat coal are exhibiting. I have made a very careful survey of

the principal peat fields of the kingdom, and am of opinion that it only requires labour to produce a money value of eight hundred millions sterling from this mighty source of wealth. Add to this the value to the State of thousands of workmen finding reproductive employment in a new industry, and the further consideration, that when a very large portion of the land has been divested of its peat, it is so much reclaimed land in a rich virgin condition, ready for agricultural and pasturing purposes, and how much is its importance magnified. If this view of the real, though at present latent, value of the peat bogs of the United Kingdom be only approximately true, the practical means of realising and rendering active such enormous wealth deserves elucidation. Nor will the importance of the subject be diminished by the consideration that the rapid consumption of our staple fuel coal, has already begun to create anxiety for the future of manufacturing England. It is unnecessary to describe the different qualities of peat

further than to say that the produce of the mountain peat is usually the purest; that of the valley bogs the most mixed and varied, while the sea-side bogs are sometimes the most impure, from the intermixture of shells, sand, and other foreign ingredients. One of the most important uses of peat is for conversion into charcoal, which is, on the whole, probably, superior to coal as a domestic fuel, though its consumption in this capacity has been restricted to its dearness. There is no need for its being so dear. But here the subject possesses a further commercial interest. It is a well-known fact that our production of iron exceeds that of any other country, and its quality is inferior. "On iron production," it has been observed, and I believe with truth, England stands first in point of quantity, but last in point of quality. This inferiority has arisen mainly from coal being employed here, whilst in other countries charcoal is used; and accounts for the fact that whenever the finest



Ground-plan of Improved Perpetual Kiln (See page 365).

descriptions of iron are required we mostly import them from abroad. The necessity for this will now disappear, for, whilst the best examples of peat charcoal possess the essential qualities of that made from wood, and heating power can be obtained from it at lower cost than from coal, its cheapness and efficiency would necessarily tend to bring it into immense requisition. All these points receive additional significance when we consider the exorbitant price of coal, the apprehension of its exhaustion, and the enormous quantity of it at present used in the production of iron, much inferior to that manufactured with charcoal. The peat question is becoming one of a national importance, only second to that of the development of our agricultural capabilities, by the reclamation of waste, and improved treatment of cultivated land.

The above, part of an interesting paper read by Mr. F. Fuller, before the Social Science Congress, at Norwich, on "The Problem of High Prices and Wages solved by developing all the capabilities of the Soil, and removing impediments to the Social and Physical Elevation of the People," should possess interest for gardeners, who, in a cold country like ours have exceptional

* While attending this Congress, I received a telegram from that gentleman, wishing me to meet him at Lakenheath Station, in this county, where he selected upwards of a thousand acres of peat, for the purpose of manufacturing coal and charcoal.

reasons for desiring cheap fuel. It is likely enough that properly prepared compressed peat may be made a useful substitute for coal in many districts.

The value of peat as an industrial material is much greater than is generally supposed. It contains ammonia and various hydro-carbons, as naphtha, heavy lubricating oil, and solid paraffin or wax. Seven hundred and seventy-five tons, which were distilled by the Irish Peat Company some years since, produced 2,716 pounds of ammonia, 77½ gallons of naphtha, 1,162 gallons of lubricating oil, and 2,325 pounds refined paraffin, which last substance was used as a substitute for wax in making candles. The value of peat as fuel alone is estimated at one dollar per ton.

MARKET GARDENING.

THE LITTLE HEATH MELON.

HAVING seen good and bad varieties of this Melon, and heard many accounts of its merits and demerits, I resolved to see it in its birthplace, where no spurious sort would be allowed to exist. With this intention I visited the great forcing establishment at Potters' Bar. Amongst the houses I found a span-roofed house, solely devoted to Melon-growing, and the Little Heath was the only sort grown in the place; it filled both sides of the house. It had been planted in a good fibrous loam mixed with a little decayed manure, underneath which is a 3-inch return-pipe. In the centre of the house, on a raised bed, without the least bottom-heat, are planted other two rows of this Melon, which are trained to a wire trellis, the two outside rows being trained up the glass, and the two middle rows trained down the glass, thus forming a succession in the same house. Last year the plants were planted out, about 1½ feet high, on the 1st of March, and the first fruit, which was ripe on the 30th of April, weighed 4 lb. 10 oz., and was shown to the Royal Horticultural fruit committee on the 1st of May. The first cut fruit in 1872 made in market 21s. each. This year the house was planted on the 5th of March, and ripe fruit was cut on the 7th of May, so that only two months elapsed from the planting of the plants till the fruit was ripe. The same fruit this year realised in market 30s. each; since then, two other crops have been obtained from the same plants, and a fourth was set as large as hen's eggs, but Mr. Monro thought that renewing the border and planting again, would be better, and, having plenty of strong plants, did so. Many of the fruits on October 1st weighed upwards of 2 lb. each, and that without receiving the least fire-heat. Thus three crops of the Little Heath Melon have been obtained from the same house in six months, and the fourth will in a few weeks be ready to cut. This sort justly claims the palm for early and quick ripening, certain fruiting, and prolificness, not only as a house Melon, but much more so as a frame variety. In order that I might see the Little Heath in full perfection, Mr. Monro accompanied me to Rabley, several miles distant, which is another extensive forcing establishment. There everything is grown for market, and the Little Heath is the only Melon grown. In one house there were hanging upwards of 100 beautiful fruit of it, each weighing from 3 lbs. to 7 lbs.; and three days before my visit there had been cut from this house sixteen ripe fruits for market, several others being ripe. We tasted one of them, and found the flavour to be excellent. This being a plant-growing place, all the Melons had to grow in was about half a bushel of soil put upon a bed of ashes, which, when the fruit is cut, will all be removed and filled with plants. If this Melon is wanted about 4 lbs. weight, and of first-rate flavour, the less heat and the less soil given it to grow in the better.

W. F.

Potato Statistics.—In regard to the Potato crop, this season occupying 514,693 acres in Great Britain, or 49,395 acres less than last year, and 112,998 acres less than in 1871, I have lately seen very large areas severely blighted in the haulm and tainted in the tubers, and numerous correspondents inform me that the disease now prevails everywhere. In one case reported to me from Essex, a grower who was offered £25 an acre for his Regents a fortnight ago, sold them a few days afterwards at £21, on account of an attack of blight. The season, fortunately, is so far advanced that a great

bulk of the extra crop we have grown will for certain be saved; whereas in August last year three-fourths of the crop throughout the United Kingdom was lost, and the value of the produce of many thousands of acres in the great Wisbeach and other districts, reduced from an average value of £20 an acre to a nominal sum. The present saturated state of the earth, with evaporation decreasing at the rate of 1° per month, is, unfortunately, against realising the hopeful prospect we had a fortnight or three weeks ago; but as there is a large proportion of the produce at or near maturity, a large percentage of it is certain to be saved, even under the most adverse circumstances. The area under Potatoes in Ireland is now returned at 903,213 acres, being 88,589 less than in 1872, and adding to it that now returned for Great Britain, we have 1,417,906 acres. Estimating the produce likely to be safely got up and stored at five tons an acre, we will have 7,089,530 tons of Potatoes in the United Kingdom.—THOS. C. SCOTT.

THE SWEET-SCENTED WATER LILY.

(*NYMPHÆA ODORATA*.)

FROM the tiny specimens of this plant, we have seen in this country, particularly in the Oxford Botanic Garden, one could



The Sweet-scented Water Lily.

get no idea of its great value as a hardy ornamental plant. We believe, that if it was generally known that it is quite as vigorous, quite as hardy, and certainly not less beautiful, than our common Water Lily, lovers of hardy plants would make some efforts to establish it in our ornamental waters. It is seen in the coldest parts of New England and Canada embellishing the lakelets, just as the Water Lily does the rivers of England. It possesses another important claim in having a rose-coloured or reddish variety, which is also well worthy of introduction, but difficult to obtain. As there is no well-grown specimen of it in England, that we know of, capable of affording a suitable illustration, we reproduce the accompanying one from the *American Agriculturist*, which, however, gives a very feeble idea of the beauty of the plant. The leaves are larger than those of our native white Water Lily. The flowers are also larger, measuring as much as 5½ inches in diameter, when fully expanded. They are very sweet-scented, and open early in the morning, closing in the afternoon.

WORK FOR THE WEEK.

THE KITCHEN GARDEN.

REMOVE stumps of Cabbage, Cauliflowers, and Brussels Sprouts, as soon as the produce from them has become exhausted. Wheel manure on to empty quarters, and trench and ridge all unoccupied spaces. See to the clearing of drains, repairing of walks, and reforming or repairing edgings. Collect leaves and vegetable refuse into a heap, which should be turned on frosty mornings, and some air-slacked lime and salt mixed with it to hasten decomposition and to destroy insect larvæ.

Artichokes (Globe).—Gather the leaves of these together, and encircle them loosely with hay or straw bands, so as to allow the ground about their base to be mulched with leaves, litter, or dry Fern; then untie their tops. If the ground is very damp in winter, a few "stools" should be lifted, planted in light soil on a dry bottom, and protected with litter—a plan by which a good supply of young suckers may be obtained for spring use.

Asparagus.—Cut over the stalks of Asparagus a few inches above the ground, and keep them dry for protecting frames and plants in severe weather. Such stalks as bear berries may be laid aside, in order to have the finest fruit picked off; the seeds should then be freed from the pulp, but not sown till spring. Fork over the surface-soil into the alleys, and replace it with a layer of rotten manure, over which strew some of the soil from the alleys, leaving all as rough as possible. Make up a slight hot-bed of leaves and litter on which to force some Asparagus, or pits heated by hot water may be advantageously employed for the same purpose.

Beans.—A sowing of the Early Mazagan, and other early Beans, may now be made in rows about 2 feet apart on a warm and dry border. Some excellent gardeners contend that they find no advantage in sowing beans so early as November, as those which they sow in December quite overtake those sown earlier.

Beet.—This crop may now be taken up at once, or it may be left in the ground till frosty weather necessitates its being lifted. In raising the roots, be careful not to injure the fibres, and shorten the leaves to within an inch or two of the crown. Separate such roots as are clean and unforked from the small and inferior ones. They may be wintered in sheds in piles, in which the crown ends lie outwards, and some sand or dry soil should be strewn amongst them. In shady places out of doors, too, they may be wintered in pits, covering them with some straw and a thin layer of soil. If left in the ground, however, and that is covered with litter during frosty weather, the roots will be better flavoured than if lifted, but it is always necessary to have a few under cover.

Broccoli, Cabbage, &c.—If precautions have been taken to protect Broccoli in winter by planting them closely in double rows, hoops and mats should be at hand with which to cover them. If Brussels Sprouts have turned in faster than required, lift them with good balls, and plant them thickly in some cool shady place. Here they will keep for a long time, without the sprouts either spoiling or bursting. Early planted Rosette Coleworts, unless treated in this way after they have hearted, will also burst and spoil, and Savoy may likewise be treated in a similar way. Freely expose Cauliflowers in and out of frames in favourable weather, and insert rows of pegs in the beds to support mats in frosty weather. As soon as the weather is likely to be keen, lift the plants and transfer them to frames. Thin out a little those sown in frames, and be careful that wet does not reach them. Break a leaf or two over the curd of Cauliflowers, turning it in, or lift the plants with good balls, and place them in Peach houses at rest or in sheds. Transplant Cabbages from those pricked out in the store-beds, as space can be spared for them. Remove decaying leaves from amongst them, and loosen the soil between the rows.

Carrots.—When Carrots have completed their growth, lift them on a dry day, cut off their tops close in to the crowns, and store them in thin ridges on a dry bottom out of doors, covering them sparingly with coarse straw, dried Fern, Heather, Asparagus stalks, &c., and over these put thatched hurdles or covers, to throw off rain. If thatched covers are not convenient, use a thin coating of soil instead. They may also be stored in cool sheds in small heaps, keeping the crowns to the outside and strewing some sand or moderately dry soil amongst them. In severe weather protect young Carrots, such as those sown since midsummer, with evergreen boughs, or other material of that kind. Sow a few seeds of Early Horn in frames; if sown amongst Lettuces, the latter will be removed before they injure the Carrots.

Celery.—Earth up late crops of Celery as they require it, and at the final earthing press the soil firmly and closely around the plants at the top of the ridges, leaving no hollow or retaining place for rain, for after the plants have completed their growth, the drier they are kept the less likely will they be to rot. Place some litter over the

ridges so as to have them always in workable condition in frosty weather.

Cardoons.—Earth up the strongest of these in fine weather.

Endive.—Protect plants of this from frost with evergreen boughs, and tie them up with matting to blanch. Lift some of the strongest with good balls, and plant them thickly on dry banks, borders, or ridges, and accommodate as many of them as possible in pits, frames, or fruit houses, so as to maintain an unfailing supply during the winter. Transplant a few from the seed-beds on light soil.

Garlic.—Plant a few cloves of this in rows, a foot asunder and 6 inches apart in the row, in a dry and warm soil; they will come into use before the spring-planted ones.

Horse Radish.—A plantation of this may be made at once, but it is better to delay such work till spring, when ground that has been trenched, ridged, and exposed to the winter's frost may be selected for it. Clear away the old leaves from a portion of the old plantation, and cover that with a layer of tan, cocoa-nut fibre, ashes, litter, leaves, &c., so as to facilitate the lifting of it in frosty weather.

Jerusalem Artichokes.—If necessary, these may be entirely lifted and pitted like Potatoes, or part may be lifted and part left in the ground, or they may all be left in the ground. The haulm or stalks, however, should be cut over, a mulching placed over the roots, and the cut haulm placed over that. Sometimes it is advisable to lift the entire crop, an operation which enables us to proceed with the manuring and digging of the soil thus occupied; but, on the other hand, the tubers are better flavoured when lifted as required for use. In lifting, take up every tuber, for all that are left will eventually grow and be troublesome, and save the smallest ones for poultry, which are very fond of them.

French Beans.—The supply of these must now be had from indoors, and for this purpose they may either be grown in pots or in frames. If in pots, they can be accommodated in Pine-stoves, or forcing-houses of any kind where they will be near the light, and where they can be syringed now and then, and have a little heat. Osborn's and Syon House are two excellent sorts for forcing; only fill the pots half full of soil, leaving the other half to be made up before the plants come into flower, and place a few sprigs of Birch in the pot to support them. Clear away old crops of French Beans and Scarlet Runners, and save the stakes from the latter.

Lettuces.—Lift some of the large hardy Cabbage and Cos Lettuces, and transplant them in light and somewhat dry soil in frames or orchard-houses. Transplant the medium-sized ones on dry banks, and pay strict attention to those sown in frames last month. Tilt up the sashes at front and back, and entirely uncover the frames in fine weather; but give them the assistance of a covering of litter if severe frost sets in. Thin the plants if too thick, stir the soil amongst them with a small stick, and dredge dry dust or wood-ashes amongst them.

Leeks.—These are now in good useable condition, and Lettuces and Endive that may have been planted amongst them should be removed. Stir the soil between rows of late Leeks.

Onions.—Examine onion stores in wet weather, and separate the decaying, soft, bruised, or growing ones, from those which are sounder. Keep the autumn-sown ones free from weeds, and stir the soil amongst them with a pointed stick or very narrow hoe. Dredge them with dry soil, sand, or wood-ashes to prevent damp.

Parsley.—This is now excellent, and means should be taken to have it in that condition throughout the winter. For this purpose insert some stakes thickly and firmly around a small piece of ground occupied with it, and interweave between the stakes some Fern, Furze, Heather, evergreen branches, &c., covering the top over with mats, or other material in the event of hard frost setting in.

Salsafy and Scorzonera.—Lift the roots of these and lay them in thickly in some sheltered and shady place, where they can easily be mulched if necessary.

Peas.—Sow some early sort on a dry well-drained border, and use some precaution against the ravages of mice. Pheasants are also sometimes troublesome; but garden netting bent over the rows keeps the latter from injuring them. It is a disputed point whether Peas sown now have any advantage in point of earliness over those sown in December.

Potatoes.—If these are stored in sheds, they should be examined to see whether the disease is making progress amongst them or not, for often at storing time affected tubers pass unnoticed, and soon afterwards rot and infect their neighbours. A few may be planted along the base of the sunny side of walls, and in warm dry borders, for an early crop; but there is not much gained by planting them so early. Start a few in warm houses on light soil for transplanting into frames when they have made shoots an inch or two in length. Prepare frames for Potatoes by forming in them slight hot-beds of litter

and leaves, and placing over them light soil in which to grow the plants.

Rhubarb and Seakale.—Clear away decaying leaves from these, and mulch the ground over their crowns with litter, leaves, tan, or other material, to protect them from frost, and to cause them to be easily lifted when other portions of the ground are frozen hard. Lift a few roots of each every fortnight or three weeks, and place them amongst some light soil in the Mushroom house, or in any other place where they can have a temperature of about 60°, and can be kept rather dark.

Spinach.—Remove all decaying leaves from this, and do not allow the leaves of trees to accumulate amongst the plants. Loosen the soil between the latter, and scatter some fresh air-slaked lime over the ground to prevent canker and slugs.

Turnips.—Lift some medium-sized useable roots and transplant them thickly in some shady corner, entirely covering their roots, so that they may be easily got at in frosty weather.

Parsnips.—Leave these in the ground, which may be mulched a little to exclude frost. When left in the ground their flavour is better than when lifted and stored in pits or in sheds.

GARDENERS IN THE UNITED STATES.

For the benefit of any young gardeners who are discontented with their prospects in this country, and who are desirous of emigrating, we think it advisable to reprint the following letter and reply from the *American Gardeners' Monthly*. We may observe that the editor, Mr. Meehan, is sufficiently conversant with every branch of horticultural detail, both in this country and in America, to be considered an ultimate authority on this subject:—"I am a young unmarried man, with a thorough practical knowledge of gardening in all its departments. I am also 'thoroughly up' in stock and tillage farming—having left a situation in Ireland which I held as laud steward and gardener for six years, to come to Canada, where I have been for the past two years. My 'Old Country' testimonials and Canadian references are first-class in regard to character and ability, as well as splendid success on the exhibition table. I hold a good situation as gardener at present; but I am led to believe that there are higher wages as well as a better and wider field for first-class men in the States. I have a strong desire to try my fortune there; and, having no person to ask advice of, I would take it as a great favour if you would be kind enough to reply to the following queries, through your pages:—1. Should I stick to gardening alone? 2. Should I stick to farming alone? 3. Should I combine the two? 4. The best time to change? 5. What place would you advise me to try under the circumstances?" [This is one of those peculiar questions which ought to be answerable, and yet puzzles us to do it. It is not true that the wages of gardeners are higher in the States than they are in England or Canada. Nominally they are; but when the purchasing power of the currency is taken into account—and this is really what "wages" amount to—English wages are better. We suppose a situation would be considered below the average in England which did not pay thirty shillings a week with house, coals, and vegetables. A gardener here, with the purchasing power of our money, ought to have £10 a month, house, fuel, &c. And few places—such as they go—give more than this. There are places which give from £15 to £20 per month; but very few. There are probably not a hundred gentlemen's gardeners in the United States who receive over £16 per month. As a rule, men are better paid in commercial establishments than in private gardens. We are inclined to think that on the whole, gardeners are not paid as well here as in Europe; and certainly not near as well paid as they ought to be. Every year large numbers of excellent gardeners leave the profession for others which pay better. The places where gardening and farming are combined are still scarcer. We think that either alone will be the best course. Changes, when made, are usually in February or March. In regard to the fifth question, the thickly settled portions of the country usually exhibit more horticultural taste and pay more than others.]

The Muscat Champion Grape.—This fine Grape, which is much condemned for its bad colouring propensity, attains the full measure of blackness in the hands of Mr. Beddard, the skilful gardener of R. Thornton Best, Esq., at Streatham Hall, near Exeter. This is good news for those who have abandoned the cultivation of this noble Grape, owing to its want of colour, as it is a prolific bearer and certainly one of the largest Grapes in cultivation, as well as one which possesses fine flavour. Mr. Beddard's specific is full exposure to light and abundant ventilation, even though he uses more fire heat to secure it. He is also very successful with Mrs. Pince's Muscat,

which he considers the finest late Grape in cultivation. It also attains complete blackness under his management. The Calabrian Raisin, as grown there, though novel in colour and quite transparent, is not a good Grape, the earthiness of its flavour rendering it rather disagreeable than otherwise.—WILLIAM P. AYRES.

Boiler Incrustations.—I have read with interest Mr. Watson's article on this subject (see p. 309), and the matter is one of much importance to all who have boilers working, with the present high price of coal. Perhaps, I may, on these grounds, ask for a further communication showing what mixture is the best for the prevention of incrustation in boilers, and how much is necessary to be used. I have two or three boilers now in use, and, as yet, have found no really beneficial mixture to prevent the great incrustation weekly going on. Perhaps some of your correspondents may have found the successful antidote, and would, for public good, inform your readers what it is.—JOHN B. BELL, *St. Peter's Hill, Grantham.*

OBITUARY.

We have to record with much regret the death of Mr. Robert Fish, of Putteridgebury, Herts, which took place on the 25th inst., an event by which Horticulture has lost one of its most gifted and distinguished practitioners. Like most men who have risen in the world, Mr. Fish began to make his mark on horticultural literature and practice young. He was born at New Scone in 1808, and received his education in the village parochial school, where he laid the foundation of a sound education, including Greek and Latin. His schooling ended, self culture began, and the latter only ended with his life, which has been all along devoted to acquiring knowledge and imparting it to others. He possessed, in an extraordinary degree, the power of condensing his intellectual resources into practice when and where they were needed. He obtained an introduction to the late Mr. London, who at once welcomed his contributions to the *Gardeners' Magazine*, and extended to him his personal esteem and friendship. He struggled against partial paralysis for years, and held the pen for horticulture till it may literally be said to have been seized from his hand by approaching death. When he began, it was, of course, rare for practical gardeners to write for the press; in fact, there was hardly any horticultural press to write for. The high character of Mr. Fish's practice only gave emphasis to his teaching. His ambition was always to prove that the clearest thinker ought to be the best practitioner, and in this he succeeded; for, if our horticultural literature has teemed with his thoughts, the gardens of Putteridgebury Park have, for the last five-and-thirty years, afforded a striking example of his practice. Beginning in a common field, he has left behind him a paradise of beauty. His love for horticulture was only exceeded by his stronger love for horticulturists. Almost his first efforts were put forth to advocate the amelioration of the condition and to elevate the status of gardeners: and throughout a long life his powers, his pen, and his purse, have been at their service. He is gone; but, though dead, he yet speaketh through his writings and his life. For the future of horticulture, it is to be hoped that the seeds of both may bring forth a good crop of the same "strain"—men who will not simply advance and improve, but likewise elevate and adorn the profession to which they belong.

COVENT GARDEN MARKET.

OCTOBER 31st.

Flowers.—Of bouquet flowers there is a large variety, including Roman Hyacinths, blue Cinerarias, Cyclamens, Violets, Indian Crocuses (Pleiones), Oncidiums, and a few other Orchids, also double-flowered zonal Pelargoniums, Mignonette, Rose-buds, Eucharis, Camellias, Gardenias, Tuberoses, Bonvardias, Epiphyllums, &c.; likewise autumn-blooming Heaths, Chrysanthemums, Begonia Weltoniensis, and various evergreens.

Fruits and Vegetables.—Grapes are plentiful and good, and Pine-apples unusually abundant; they chiefly consist of Queens, Smooth Cayennes, Providence, and Black Jamaicas. Orchard fruits are abundant; Pears comprise Duchesse d'Angoulême, Marie Louise, Beurré Bosc, Beurré d'Anjou, Beurré Clairgeau, Beurré Diel, Glou-Morcean, and other sorts. Peaches, with the exception of a few of the Salway kind, are over, as are also Figs and Melons. Seakale has made its appearance in the market, and we hear fewer complaints there about Potato disease than we did a fortnight ago.

Prices of Fruits.—Apples, per half-sieve, 9d. to 1s.; Chillies, per 100, 2s. to 3s.; Cobs, per lb., 1s. to 1s. 9d.; Chestnuts, per bushel, 15s. to 20s.; Filberts, per lb., 1s. to 1s. 6d.; Grapes, hothouse, black, per lb., 1s. to 6s.; Muscats, 2s. to 6s.; Lemons, per 100, 8s. to 14s.; Melons, each, 2s. to 4s.; Oranges, per 100, 12s. to 24s.; Peaches, per doz., 6s. to 12s.; Pears, per doz., 1s. to 4s.; Pine-Apples, per lb., 3s. to 6s.; Tomatoes, per doz., 1s. to 2s.; Walnuts, per bushel, 8s. to 12s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 1s. 6d. to 3s.; Beans, Kidney, per half sieve, 1s. 6d. to 2s.; Beet, Red, per doz., 1s. to 2s.; Brussels Sprouts, per half-sieve, 2s. 6d.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 6d.; Cauliflower, per doz., 1s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 3s. to 4s.; Cucumbers, each, 6d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 3d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pot, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 2s. 6d. to 4s.; button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Potatoes, per bushel, 2s. 6d. to 4s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Salsify, per bundle, 1s. to 1s. 6d.; Savoy, per doz., 1s. to 2s.; Scorzoneria, per bundle, 1s.; Seakale, per punnet, 3s. to 4s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, per bunch, 3d. to 6d.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE FLOWER OF THE SEASON.

ONCE more the Chrysanthemum is enlivening with its blossoms some of our private gardens, and the show at the Temple, taken on the whole, is about as fine as in former years. The Chrysanthemum is, *par excellence*, the flower of autumn, and ought to be seen in every window and balcony garden in London and other large towns during November and December. Its culture is so simple, and the best varieties are so easily obtained that we wonder the plant is not more generally grown than it is, not only in smoke-pent cities, but also in suburban gardens. Its blossoms of crimson, snowy-white, purple, or gold, would do much to dispel the gloom which invariably ensues after the bedding-plants are cut off by the first frost in October. Cannot we have a bright show of Chrysanthemums in the parks after the bedding plants are rooted up in autumn? If this can be done by the humble appliances possessed by the gardeners of the Inner and Middle Temple, surely those who have, speaking practically, unlimited facilities at their command, and a much brighter atmosphere in which to work, should not suffer themselves to be outdone in this respect. This is not written in a carping spirit, but because we know from experience that the suggestion is practicable without entailing any great additional labour in its adoption. Costly erections are not required in Chrysanthemum culture. Cuttings taken off the old stools in March or April, strike freely in a cool frame. After rooting pot them either singly, or two, or even three, may be grouped in larger pots so as to form good specimens for conservatory decoration. The plants can be kept in a frame or cold pit until established, when they should be set outside in a position sheltered from rough winds, but fully exposed to the sun, a gentle slope to the south or south-east being the best aspect. Avoid plunging the pots. This mode may save a little trouble in watering; but the plants either root through the bottoms of the pots, or else become water-logged, and in either case the loss of their lower leaves is the result. The finest plants we ever saw were grown in a Vine border, each pot being set on two bricks, so as to allow all superfluous moisture to escape readily. These plants were in the cutting-pots until the beginning of May, and in November bore from eighteen to forty-eight flowers each, and were feathered down to the pot tops with dark green foliage of the freshest description. Some of the individual flowers on the larger kinds were from 5 to 6 inches in diameter, and as perfectly symmetrical as it is possible for such flowers to be. These plants were grown by Mr. Phillip Watts, of Withcote Hall Gardens, near Oakham, and are sure to be remembered by others of our readers who saw them in flower at the time. There is no real necessity to grow tall lanky plants for show flowers, although that system is too often adopted. We have seen as fine flowers on plants from 18 inches to 2 feet high as ever were grown on leggy single-stemmed specimens three or four times that height with a solitary bloom and the top. As we have before observed, the show in the Temple Gardens is now at its best; but beautiful as are many of the individual flowers, we would much rather see really well-furnished plants well grown, well flowered, and with foliage reaching to the pot tops. It is no test of skill or ability to grow a large number of straggling plants, and then pack them together, so that their tops only are seen, in order to produce a general effect. This is a step in the wrong direction, since we know by our own experience that a much better general effect can be produced by growing and judiciously grouping plants, each of which will bear inspection from all points as a single specimen. To form good specimens of the large-flowered varieties is easy, if due regard is paid to the pinching process after the cuttings are potted off in the spring. The Pomponé class, as a rule, make neat bushy little plants without much attention, but if they are also properly pinched, so much the better. The *rationale* of Chrysanthemum culture just resolves itself into the simple operations of judicious pinching, and a liberal allowance of water and

diluted liquid manure at the root. The plant is a gross feeder, and must never be allowed to get dry, or the bottom leaves turn yellow and fall at once. Care, however, must be taken not to overdo the plants with stimulants, as it often causes them to produce green or hard centred flowers. The time when liquid manure does most good is after the buds are formed, as the pots are then generally full of hungry roots. Every one who has a sunny wall or border, may have it gay during mild winters by the use of this plant, which seems pretty well as much at home in the fogs and smoke of the Metropolis, as in the bright and sparkling country atmosphere. Cuttings, struck in March, should be kept near the glass, and should have their points pinched out soon after they are rooted. In about a month or six weeks afterwards pinch all the shoots again, and just as they break for the third time shift them out of the small pots into larger ones, say 11-inch pots, using a good fresh hearty compost of fibrous loam and well decayed hot-bed manure, to which is added sufficient, coarse well-washed sand or grit to keep the whole open and porous. Never pinch after the beginning of July, as that is the month in which the buds are formed. After this time set them outside, and train out the shoots so as to give them the advantage of all the light and air possible. We have now a race of early-flowering varieties introduced from continental gardens a year or two ago, and by means of these the Chrysanthemum season may be said now to be from July until February. These dwarf early kinds are largely grown for Covent Garden Market during the late summer months, and form an agreeable prelude to the general show of large and Pomponé varieties.

MR. PEACH ON MIXED BORDERS.

THE REV. C. P. Peach, of Appleton Le Street, in giving his ideas of Paris gardening, in a contemporary, says:—"But because many persons have ridden the bedding-out mania too far, it is no reason why we should go to the opposite extreme and have perpetual monotony with the repetition of the same sort of flowers, mixed without any reference to harmony of colour or contrast of form." The words italicised furnish us with Mr. Peach's notion as to the ideal of taste in flower-gardening, possessed by those who advocate something better than bedding-out. Mr. Peach, who is the great apostle of bedding-out, should not be so unjust to his opponents. We, who seek to supplement the bedding-out system with the infinite variety of charm that may be gleaned from the rich stores of plants now at our disposal, desire, forsooth, "perpetual monotony," &c., as above! And not content with this, he takes the poor stiff borders of some of the older Paris gardens, and says:—"What I here noticed of the Luxembourg Gardens is equally true of the Versailles and Tuileries Gardens. Those who like mixed borders might have a surfeit of it here, and I think would have their propensities cured." Now these mixed borders are not mixed borders at all, in the proper sense of the word, the plants being, for the most part, geometrically arranged; in fact, it is bedding-out, with a slight difference. So those who like mixed borders are to have their "propensities cured" by following Mr. Peach's example, and having a look at the stiff borders of Versailles, &c. The fact is these borders have little in common with a good mixed border, or any kind of artistic gardening. Bedding out in a simple state is of far older date here than in English gardens, and spring bedding too; for the practice of filling the borders in the older Paris gardens every year with spring flowers, and replacing these with plants that bloom in summer and autumn, both kinds being geometrically arranged, was carried out here for many years before it was improved upon by ourselves. These borders are among the most objectionable features of the bedding system, and have nothing in common with the various artistic improvements which are now beginning to find a place in our gardens, and of which we could mention notable examples in Mr. Peach's own county and in many other parts of England. We, of course, have no right to cavil with Mr. Peach's profound love of bedding out; but we hope he will refrain from misrepresenting the views of those who happen to differ greatly from him on this question, and even the facts that bear upon it.

NOTES OF THE WEEK.

— THE rage for testimonials is by no means so prevalent in France as it is in England, but we learn with pleasure that the horticulturists of that country are about to erect a monument to the memory of the late Mr. Barillet, for many years the able, courteous, and popular superintendent of the Paris Gardens. Subscriptions for this purpose are solicited, and should be addressed to the Secretary of the Central Society of Horticulture, at Paris.

— THE Isle of Wight is remarkable for its gigantic Fuchsias, Myrtles, and Hydrangeas; but more remarkable than all these are its gigantic Yuccas. Of these last one may be found in the gardens at St. Clare, 11 feet high, with a stem, at 2 feet from the ground, 11 inches in diameter. It is much branched, and, in order to prevent the wind from injuring it, the branches are clasped and otherwise supported. There are also other fine specimens in this garden, as well as in the gardens at East Cowes Castle, where the largest is over 10 feet in height, and has a stem some 9 inches through. This, like the others, has to be kept in position by means of artificial supports.

— We have received an excellent photographic representation of the interior of Mr. Gilbert's Melon House, at Burghley, as it appeared this season when full of Melons, which hang in all directions, almost as "thickly as Blackberries." Among them we recognise the Burghley green-fleshed kind, a fine variety, raised by Mr. Gilbert, the fruit of which is thin-skinned, bright golden-yellow in colour, and excellent in flavour. Fruits of it have been shown weighing upwards of 5 lbs. each, and, when exhibited at South Kensington, the Royal Horticultural Society awarded it a first-class certificate. It is a strong grower, and remarkably prolific.

— THE extensive redwood forests which abound in California cover an immense area of land, the trees growing in many instances to the height of 250 feet, and from 6 to 10 feet in diameter. But the necessity of preserving the timber is felt in many parts of the State, owing to the reckless manner in which forests have been destroyed, and a bonus for planting trees is now given in those parts which are utterly devoid of timbered land. We may thus hope to see the redwood preserved on the Pacific coast.

— We have received some of the most superb Apples ever seen in London from Mr. Shepherd, gardener at Pax Hill Park, Hayward's Heath, all of which have been grown on the French Paradise stock, and the trees which have borne them are described as far surpassing what the most flattering engravings of the French trees might have led us to expect. These fruits have been pronounced by the best judges in Covent Garden to be the finest Apples ever known to have been grown in England. Among them are white Calvilles, each weighing 1 lb. 4 oz., and measuring 15½ inches in circumference; Belle Josephines, brilliant golden yellow, 12½ inches in circumference; Reinette du Canada equally large; and Belle de Bois, weighing each 1 lb. 7 oz., and measuring 15 inches in circumference. These have been obtained from cordons, and, as may be seen, are magnificent results of that system of culture. We shall, on another occasion, enter more particularly into the details of this matter.

— IN the last number of the *Revue Horticole* M. Carrière notes the unusual occurrence of the fructification of *Yucca quadricolor variegata* this year in the gardens of La Muette. This plant is a variety of *Y. aloifolia*, of which it presents the general appearance and habit. The leaves, however, have a broad whitish-yellow band running through the centre. The fruit is also curiously marked like the leaves with a broad whitish-yellow band. M. Carrière considers that a large proportion of the seeds will reproduce the variegation.

— IN this month's number of the *Botanical Magazine* is a figure and description of a Saxifrage (*S. Kotschy*) which few of our readers probably have ever even heard of, and which has this year flowered for the first time in the Royal Gardens at Kew. Dr. Hooker's account of it is as follows:—"This is one of the group of Saxifrages that form dense, hard, cushion-shaped masses on the mountains of the South of Europe and Western Asia, where they are exposed to great summer heat and winter cold, without the humidity of a more northern or western climate. They are consequently very difficult to cultivate in England; and, when they have succeeded, they never form the luxuriant masses that they do in the Mediterranean region. *S. Kotschy* is a native of precipitous rocks in the Cilician Taurus, at an elevation of from 6,000 to 9,000 feet, as also of the mountains of Armenia and Cataonia, all in Asia Minor, where it was discovered by Aucher Eloi, the French explorer of the Thessalian Olympus. The specimen here figured flowered in the Royal Gardens (where it has been in cultivation for a good many years) in May, 1873, and bears evidently imperfect flowers, the petals being smaller than in the native specimens, and the stamens and the styles quite arrested in growth."

— MR. MEEHAN, the editor of the *Gardeners' Monthly*, is writing ably to prove that forests are the result, not the cause, of climate, and we think he is right.

— MR. D. THOMSON has a short article in the *Gardener* strongly advising the use of Alpine plants as bedding plants in the winter garden, a purpose for which they are well fitted.

— WE have received from Mr. Wells, of Bouverie Street, a sample of Grapes grown without heat, in his ground Vineries. As usual, they are of fine quality; indeed, superior to many Grapes grown in ordinary Vineries.

— THE town trustees of Sheffield, a body having considerable revenues in that town, decided the other day to purchase 20 acres of land in the outskirts of the town for the purpose of a park and recreation ground, the cost of which is £14,000. A few months since the Corporation of Sheffield purchased a park, and the land to be purchased by the town trustees is in close proximity to it.

— IN the *Bulletin mensuel de la Société d'Acclimatation de Paris* M. P. Marès states that in Algeria "the results of the experiments to produce different coloured silks go to show that silkworms fed on Cherry leaves produce a bright chromo-yellow-coloured silk, those on Pear leaves a darker shade of the same colour, those on Apple leaves a nearly white silk, but coarser than that of the silkworms fed on Mulberry leaves."

— THE last number of the *Belgique Horticole* contains a coloured figure of *Canistrum aurantiacum*, the sole representative of a new genus of Bromeliads, founded by M. E. Morren. The peculiarities of this genus are the unusual form of its irregular sepals and the basket-like appearance of its inflorescence, to which its distinctive name, *Canistrum*, is due. The flowers are very numerous, of an orange colour, and arranged in a closely-set capitulum or head, surrounded by broad red bracts.

— IN a recent number of the *Comptes Rendus*, M. A. Brongniart describes the Palms of New Caledonia, from the material collected by Balansa, Veillard, and Pancher. Eighteen species are found in the island besides the Cocoa-nut, which is considered to be introduced. All belong to the tribe Arcaceæ, three being referred to *Kentia*, of Blume, three to *Kentiopsis*, Brongn., which differs from *Kentia* in having twenty to fifty stamens united in the centre of the flower; the other twelve are included in a new genus, which is called *Cyphokentia*, characterised by its unsymmetrical fruit, with a gibbosity on one side. It is remarkable that none of the other tribes of Palms distributed through the Pacific should be represented, so far as known, in New Caledonia.

— A CORRESPONDENT who visited the Yosemite Valley some two or three years ago, thus writes to us concerning it:—"I shall look back to a month's ramble over the forest-clad slopes of the Sierra Nevada of California as one of the most enjoyable of my life. As a lover of Nature's works, I think that grand Yosemite Valley one of the finest bits of scenery the world can produce, with its giant cliffs from 3,000 to 6,000 feet high, and waterfalls from 900 (Bridal Veil fall) to the Great Yosemite fall 2,640 feet. I hear first-class roads, and other modern improvements are rapidly being made to get to the valley. I am glad to say I had to ride on an Indian trail for more than sixty miles, with an Indian guide, and I hope that grand bit of the Creator's work will never hear the sound of a locomotive."

— ALTHOUGH the weather during the past few weeks has been anything but favourable for building operations, very extensive progress has been made in the construction of the new Alexandra Park Palace. Messrs. Lucas Brothers have between 500 and 600 men at work in laying the foundations, and levelling the old gable ends to the height required for the new building. It is expected that this portion of the work will be finished in the course of a week or two. During the short time the old palace was open to the public it was found that there was barely space enough in it to accommodate the number of visitors. The directors have therefore enlarged the area of the new building, by bringing the outer walls to a line with the centre arch. At either end it is proposed to construct a conservatory, and the theatre, which was before in the interior, will be built adjacent to the south-west corner of the building.

— THE *Journal of the Franklin Institute*, Sept. 1873, contains Government reports on the decay and preservation of timber. Generals Cram and Gilmore recommend the Seely process as the best. It consists in subjecting the wood to a temperature above the boiling point of water, and below 300° Fahrenheit, while immersed in a bath of creosote a sufficient length of time to expel the moisture. When the water is thus expelled the pores contain only steam; the hot oil is then quickly replaced by a bath of cold oil, by means of which change the steam in the pores of the wood is condensed, and a vacuum formed into which the oil is forced by atmospheric pressure and capillary attraction. General Gilmore thinks a wooden platform, thoroughly creosoted, would last twenty to thirty years, and be better than a stone platform during that entire period.

THE INDOOR GARDEN.

LAGERSTROEMIA INDICA.

THOUGH not so often found in collections as it ought to be, this is one of the finest and most profuse flowering of greenhouse or half-hardy shrubs. It blooms freely in the Palm-house at Kew, where the ends of even its smallest branches terminate in a mass of rosy-purple flowers. Individually, the blossoms are about the size of a shilling, and have six long clawed, curled, or crumpled petals, not unlike those of the scandent yellow-flowered *Stigmaphyllon ciliatum*. When well grown this plant is one of the greatest ornaments one could desire, either for a plant stove or cool conservatory. It will grow and flower freely, even when planted under a sunny wall in the south of England, and during the past summer we have



Lagerstroemia indica.

seen it flowering very freely out of doors in several of the gardens around Paris. When grown in a pot or tub indoors it makes a shrub eight or ten feet high, and flowers freely every summer or autumn if cut back after blooming. It should have a moderately rich sandy soil, and should be thoroughly well drained. It requires a liberal supply of water when growing. In America it does well out of doors, and a plant of it stood fifteen degrees of frost in the Botanic Garden at Brest. It is a native of China. One species, *L. reginae*, grows to a large size, and is much used in India for boat-building and similar purposes, as it lasts well when submerged. B.

TASSELLED AND CRESTED FERNS.

I AM somewhat at a loss how to account for the abnormal forms among our native Ferns—forms which we do not find among exotic species. What, therefore, causes Ferns that

grow in British soil and in a British atmosphere to sport in the remarkable manner in which they have done with us during the last fifty or sixty years? These are questions difficult to answer in a satisfactory manner. I have heard it asserted that we at home are not in a position to say, with any degree of accuracy, that foreign Ferns do not sport into the crested and tasselled forms, to as large an extent as our indigenous species do, because their habitats have not hitherto been so thoroughly explored by collectors, as those of our native Ferns, a statement in which there is certainly some truth; but it is not sufficiently convincing to satisfy me; for, having had frequent opportunities of examining large herbaria, I cannot bring myself to believe that exotic Ferns (although subject to great variations) are liable to become altered in form to the same extent as our native kinds are, or we certainly should have received some of them from our numerous plant collectors long ere this. This fact was deeply impressed upon my mind a few years back, during a walk over hill and dale between Halifax and Todmorden, especially in the neighbourhood of Luddenden Foot; there I saw Ferns growing everywhere, particularly *Athyrium Filix-Fœmina*, but although any amount of varieties were to be found, it was quite an exception to see the recognised normal state of the plant; there were forked fronds, tasselless fronds, depauperated fronds, miniature fronds, and gigantic fronds; it, therefore, occurred to me that if exotic Ferns varied, to this extent, we must have received abnormal forms from our collectors, who are ever on the out-look for new plants of commercial value. Some assert that we are indebted to the Fern cultivator for the numerous varieties of British Ferns which we possess, and to some extent this is true; but yet some of the most beautiful and distinct of our crested and tasselless Ferns have been originally found in a wild state, the same form, in some instances, occurring in widely separated localities. I have previously stated that I am inclined to believe that the majority of these forms have sprung up during the present century; and one of my reasons for this belief rests on the fact that old British botanists are silent upon the subject. Had such varieties been known to them, some records of them would have been left behind. True, some few varieties of British Ferns are noticed; but that only serves to strengthen my supposition in regard to the non-existence of the great number of varieties which now serve to beautify and adorn our rocks and glens, and which, when tastefully arranged, produce such a charming effect in our rock gardens during the summer months. Another remarkable fact, and one which goes far to support a notion which I entertain that changes in form such as have been recorded are brought about through some peculiarities existing in the atmosphere or soil, is that, in other parts of Europe, these self-same species do not acquire such protean forms as are to be found in our own country. Again, the majority of the exotic kinds which are crested and tasselless are the results of home cultivation, and have not been introduced, but have originated in our plant-houses. The number of crested and tasselless Ferns is now very numerous, and most of them are handsome; but I am bound to confess that the only merit which many of them possess lies simply in their being abnormal; otherwise they have no claim to be classed with such as are elegant or beautiful. Subjoined are the principal crested exotic Ferns now in cultivation, viz.:—

GARDEN ORIGIN.

Adiantum excisum multifidum.
A. e. Leyii.
Asplenium palmatum cristatum.
Blechnum occidentale multifidum.
Doodia aspera corymbifera.
Gymnogramma chrysophylla Parisii.
G. pulchella Wettenthaliana.
Lomaria nuda pulcherrima.
Microlepia irioides cristata.
Nephrolepis davallioides furcans.

Pteris serrulata cristata.

P. s. corymbifera.

P. s. Applebyana.

P. s. Dixonii.

P. s. polydactyla.

Drynaria vulgaris cristata.

And many other forms.

INTRODUCED.

Lomaria gibba Bellii.

Nipholobus lingua corymbifera.

Nephrodium molle corymbiferum.

Of this last there are now numerous forms.

It will thus be seen that these crested exotic kinds are few in number, and I may add that most of them have originated in our gardens, whilst crested varieties of British Ferns are far too numerous to mention here, but they belong chiefly to the following genera, viz.: *Athyrium*, *Scolopendrium*, *Polystichum*, *Lastrea*, *Polypodium*, *Blechnum*, and *Osmunda*. G.

THE GREENHOUSE IN WINTER.

Nothing is more common in arranging plant houses at this season than for the best specimens to be staged first, giving each fair breathing space, and leaving the inferior specimens until the last. Then it is that courage is required to throw them away, instead of crowding them into the house to the certain injury of better things. This is the secret of the failures that sometimes attend the efforts even of some of our most painstaking cultivators. They convert their plant houses comparatively into mere Black Holes of Calcutta, where plants are crowded together until the weaker ones become fairly suffocated. Of this we require no stronger evidence than the sight of the long, lean, lanky plants which crowd many plant houses. The rule should be, directly a plant becomes unsightly in itself, to commit it to the rubbish-heap; flowers at the cost of an unsightly plant have no charm. The first consideration before removing plants into their winter quarters is to take care that those quarters are thoroughly cleansed, the glass and woodwork washed with soap and water—the woodwork painted if necessary—and the stone or brickwork washed with hot lime, to which a handful or two, according to the size of the house, of sulphur may be added. The object of this washing is, first, the routing out or destruction of insects and their eggs; secondly, more light; and thirdly, as the consequence of cleanliness, a sweet and wholesome atmosphere. This cleanliness must extend to the plants and the pots in which they are growing. The latter must be divested of every particle of dirt by means of the scrubbing-brush, and, if necessary, sand. Sometimes pots, if not properly baked have a soddened, heavy appearance, quickly become green, and in these the soil dries but slowly. A plant so situated may be compared to one growing in ill-drained land; the water does not pass away with sufficient rapidity, and consequently there is not that free circulation of air through the soil which is indispensable to perfect growth. Such pots should always be removed, and be replaced by clean pots of the proper size. At the same time clear any wet soil from the surface of the pots, not necessarily digging down so as to disturb the roots, but just taking away that surface skin upon which confervæ or other water weeds may have collected. Always replace the soil with compost of the same quality, and do not, because you have peat at hand, use it when you ought to apply loam. At the time of surface-dressing, it will be wise, should the earth in any of the pots appear soddened, to turn the plant out and wash the inside of the pot, or, what will be better, put the plant into a clean, dry pot of the same size. At the same time, make two or three holes vertically through the soil with a thin pointed stick, and, with cautious watering for a short time after the top dressing is applied, the soil will soon regain its wonted porosity. Before large plants are taken into their winter quarters, it would be well that each should be laid upon its side and thoroughly washed by means of the syringe or garden-engine; and, when we say washed, we do not mean merely sprinkled, but the water should be applied with such force as to wash the foliage thoroughly clean. For this purpose it will be best to lay the plants upon a clean pavement, or, if that cannot be had, then lay down a clean mat for them to rest upon. Apply the water with full force to the stem of each plant, and in that manner the pores will be opened and health be materially improved. The plants being cleaned, there is a point or two to be considered in their arrangement. Some in the greenhouse, for example, such as Heaths, Epacrises, and Acacias, will bear any amount of exposure; while to Eriostemons, Boronias, Leschenaultias, and Gompholobiums, a cold draught is almost certain death. Hence, in arranging the house, it will always be best to place the last-named section in the warmest part, where they will get a free circulation of air without a cutting draught. Then, again, in the ordinary greenhouse you have hard-wooded as well as soft-wooded plants to accommodate. The latter will generally be found the most susceptible to cold, and must be provided for accordingly. The fact is, the more hardily plants are treated from this time the less likely will they be to sustain injury through the winter; and hence, observing the rules we have laid down, it will be manifest that, secured from frost and the cold draughts we have spoken of, the more air a greenhouse receives the better will it be for the plants. Never apply a fire until it

is necessary to exclude frost, and then use no more than may be requisite to maintain the desired temperature. These may appear trifling details, but it is upon such that perfect success in plant cultivation depends; in fact, they form the main portion of that cleanliness without which perfect success is impossible. If we visit the establishments of any of our great plant growers, we find their plants and plant houses clean, with persons washing the leaves of the plants, and removing every speck of dirt with perfecting care. This may be called the over-refinement of cultivation, but it never yet has been carried too far. Plants live by a respiratory process, just as animals do; they are influenced by good or by bad air, precisely in the same manner. Dust chokes the breathing pores; and, if plants are not washed, they are affected just as we should be under the same circumstances; their natural economy is disturbed, and they suffer accordingly. Thus we find that smooth and rather large-leaved plants—Aucubas, Camellias, Myrtles, Indiarubber, and the like—always succeed better in the smoke of towns than small-leaved plants, as the Coniferae, Heaths, and woolly-leaved Pelargoniums, Cinerarias, &c., as these collect the dust and hold it, rain only tending to increase its tenacity; while upon the smooth large-leaved plant every shower washes it away. Last year, from November until the following spring, we had in our sitting-room a plant of the beautiful *Dracæna ferrea*, which, washed twice or thrice a week, resisted the evil effects of a gas-poisoned atmosphere, and looked well to the last. A.

BOUGAINVILLEA GLABRA.

I HAVE a plant of this under my care, which is admired by all who see it, and, in my opinion, is unsurpassed for elegance. It is growing in a large pot in a small intermediate lean-to house, the roof of which is entirely covered by its foliage and ornamented by its beautiful manve-coloured bracts. It is trained with a single stem until it reaches the roof, and then horizontally on wires underneath the glass, at a distance from it of about 15 inches. This enables the flowers to receive a proper amount of light and sunshine, which is essential to their free and abundant production. This plant will live in a greenhouse and grow in almost any kind of soil, but I have found that it does best in an intermediate house or a cool stove, potted or planted in a compost of equal parts of loam and peat. It is very easily propagated by means of cuttings. My method is to cut and strike, in May, shoots of the previous year's growth, or young wood of the same year in October. I have struck shoots about 9 inches long, full of young buds, in 60-sized pots for decorative purposes, and very nice they look when grown in this way. The light in the roof of the house here has been kept continually open, and many of the shoots of the plant have passed out through it into the open air; some of these shoots are now as thick as a man's thumb, and bear a profusion of flowers, which are of a much darker colour than those produced inside the house. I may mention that I never quite rest the plant, and that I prune it severely in December or January, leaving a few of the strong shoots of the previous summer's growth. The summer pruning consists merely in cutting blooms for the decoration of my employer's table. This plant is very effective when trained in the balloon style, but to obtain a good supply of cut flowers, I should advise those who have not succeeded in flowering it to their satisfaction, to adopt my system, by which they may have flowers in abundance from May until the end of November. D. S. GILLET.

Court Garden, Great Marlow.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Double-flowered Cinerarias.—These, I see by the *Florist*, are beginning to attract attention. I well remember the one alluded to in that periodical—having been raised by the late Mr. Kendall, a well-known raiser and grower of Cinerarias, some twelve or fifteen years ago. It was perfectly double, and very pretty, though not so handsome, if we may judge from the description, as the new double-flowered kinds just raised by Messrs. Haage & Schmidt, of Erfurt. The latter will not only be useful as indoor decorative plants, but also for "cut bloom."—H. D.

Masdevallia Veitchii.—We have in bloom here a beautiful specimen of this "cool-house" Orchid, which, during last summer, produced several flowers that remained long in perfection. Under ordinary treatment this species will grow and bloom freely. It requires plenty of water while growing, and ought never to be allowed to get dry. Nothing can be more pleasing than its rich colour at this season of the year.—JAMES DYER, *The Gardens, Dovenham Bank, Great Malvern*.

Tacsonia insignis.—This new Tacsonia, of which a coloured plate is given in the current number of the *Florist*, was raised here in Balwyn seeds at Hull, by Mr. Anderson, gardener at Sowerby House. It is a beautiful crimson-flowered climber, which supports itself by tendrils till it begins to flower, and then hangs loose, each branch often having from a dozen to fourteen flowers, all open at one time. It cannot fail to be a valuable addition to our ornamental indoor climbing plants.—M.

THE FLOWER GARDEN.

PANSIES SUITABLE FOR BEDDING.

Yellow Varieties.

Cliveden Yellow.—Blossoms large, rounded; in colour, orange-yellow, having a dark blotch in the centre; liable to show dark blotches of colour in the upper petals early in the season; begins to flower from the end of April, and is very continuous all through the summer. Habit, dwarf and free; foliage, slightly woolly; a capital bedder.

Pride of Rufford.—Evidently a seedling from Cliveden Yellow, which it much resembles, but the blossoms have rather more substance, and are richer in colour. It also rarely exhibits any dark colour in the petals. It is a robust and continuous grower, blooming very freely, and late into the autumn. One of the finest yellow bedding Pansies in cultivation.

Sandbeck Gem.—Another form of Cliveden Yellow, but not superior in any way to that kind.

Golden Perfection.—A fine variety, having blossoms of large size, well rounded, and of good substance; in colour it is rich orange-yellow, and has a large dark blotch in the centre. It may be ranked among first-rate varieties.

Bedfont Yellow.—A very distinct kind; flowers, medium sized; clear yellow, having no blotch, but a few fine dark lines round the eye; blossoms stout, and borne well above the foliage, which is pointed in form and glossy. This variety blooms very early, and is therefore specially useful for spring gardening.

Prince of Orange.—A dwarf, dense-growing kind; free, and of continuous growth. Flowers, extra large, well rounded, and of good substance. This is a rich orange-yellow self, without blotch, but the top petals are apt to be rather discoloured early in the year. It is one of the earliest to flower, and keeps in bloom all through the summer, and late into the autumn.

Perpetual Yellow.—A very dwarf compact kind and a very free bloomer early in the spring. The flowers are, however, not a good shape; they are thin and much marked with dark lines. Nevertheless, it is very effective in the spring garden, either in the form of lines or edgings. Foliage, glossy green and rounded.

Primrose Queen.—A new and distinct shade of colour among Pansies, the flowers being of a delicate Primrose with slight dark lines round the eye, large in size, and very effective; growth, free and continuous. This variety makes a most effective summer-bedding plant.

Yellow Boy.—This belongs to the Tom Thumb section, the habit being very dwarf and compact, and of a most distinctive character; foliage, small, rather woolly and pointed; flowers resembling those of a large *Viola*; in colour, clear yellow; and they are borne in great profusion all through the season. It is one of the very earliest to bloom, and is, therefore, most valuable in the spring garden for small beds or for edgings. A first-rate bedder.

White Varieties.

White Bedder.—A popular kind, remarkable for its dense, free, and continuous habit of growth. The flowers are of good size, without blotch in the eye, but are apt to have discoloured petals early in the spring. It blooms early, and is equally valuable as a white summer bedding sort.

Miss Maitland.—A new kind sent out last year by a Scotch firm. It has a free habit of growth, and is evidently a free grower. Flowers of moderate size of clear colour, with a small bluish blotch in the eye. A very promising kind.

Snowflake.—A very fine new self-coloured flower, good in form and in substance, clear in colour, and without blotch. It blooms very early, and is most useful both for spring and summer bedding. Habit, free and vigorous; foliage, glossy and well rounded; altogether a first-rate kind.

Cliveden White.—An old kind, now surpassed by others; habit, moderate; flowers, small, considerably lined with black marks.

Great Eastern.—A very fine show variety, probably the best and purest of all the white bedding kinds, with a dark centre blotch; its habit is dwarf and vigorous, and it constantly throws up new growths from the base. Flowers, extra large and well rounded, and very pure in character, never "blueing," as happens in the case of many white selfs; it blooms very early, and in good rich soil it makes a first-rate summer bedder.

Foam.—A dwarf compact-growing kind, having medium-sized flowers of good shape and substance, pure in colour, with a deep dark blotch in the centre; blossoms rather incurved, and, therefore, not so effective as good flat flowers.

Lily White.—One of the Tom Thumb section, having a very

dwarf dense but vigorous habit; foliage small and pointed; flowers, medium sized, rounded, and of good substance; in colour, pure white marked with a few dark lines, radiating from the eye. Makes a first-rate summer bedder, and is specially useful for small beds or edgings.

Blue Varieties.

Cliveden Blue.—When true, this is one of the earliest blooming of all bedding Pansies, and the flowers, which are large and well rounded early in the year, are of a bright blue, becoming lighter towards the eye. In habit it is strong and good, the growth being upright and distinct; foliage pointed. This variety is most valuable for spring bedding, but cannot be depended on for summer work.

Trentham Blue, *alias* Beau de Ciel, also sometimes wrongly called Cliveden Blue.—This has a vigorous habit, but blooms somewhat sparingly. The flowers are of good size and substance and well rounded, coloured bright blue early in the season, but very pale in summer. This is not so desirable as the previous kind for spring bedding.

Cliveden Blue Improved.—This is, as far as the name is concerned, a misnomer, as it displays no improvement on the old kind. It is neither so early nor of so good a colour. Its blossoms are of medium size, somewhat thinly produced, and of a purplish-blue. Habit, rather straggling; foliage, glossy and rounded.

Imperial Blue Perfection.—This is usually called a *Viola*, but it is properly a bedding Pansy, which should not be confounded with *Viola Blue Perfection*. It has a robust habit of growth, flowers very early, and continues to bloom without intermission all through the summer. Flowers purplish-blue, of irregular shape, borne well above the foliage. It is, taken altogether, one of the most effective of bedding plants.

Rufford Blue.—This is a bedding kind of fairly good colour, and much used for market purposes; its flowers are of good size and have a dark blotch in the centre; habit, vigorous. A useful variety.

Blue King.—This is one of the best and most constant of all blue Pansies; habit, compact and vigorous; flowers, rounded, flat, and of good substance, thrown well above the foliage; colour, bright blue with dark blotch in the centre. Might well be classed as a blue self show variety. It was raised by Mr. Nichol, Edinburgh, and is altogether a kind on which full dependence may be placed.

Imperial Blue.—A large showy flower of good substance and deep blue colour, has a large blotch in the centre, and might well be ranked as a blue self fancy Pansy. It has, however, somewhat uncertain habit, and is chary of drought; growth, rather straggling and unsuitable for bedding purposes; blossoms early and is very effective, for a short time, whilst young.

In Memoriam.—Quite a new kind; vigorous habit, and one which promises to make a capital bedder; foliage, glossy and rounded; flowers, large, of good shape and substance; the colour being a deep cobalt blue with a solid black blotch. This is a distinct and beautiful kind, its colour being both rich and constant.

Blue Gem.—One of the Tom Thumb section. Flowers pale violet-blue on the lower petals, upper petals shaded violet. Habit, dwarf compact; foliage, small and rounded. Blossoms early and constantly, and is most useful either in the spring or summer garden in the form of small beds or edgings.

Little Gem.—A unique little Pansy, also belonging to the Tom Thumb section; rather a moderate grower. Dwarf and compact; flowers borne freely above the foliage, which is small and rounded. Colour, lower petals violet-blue, top petals blotched with violet-purple.

Purple Varieties.

Cliveden Purple.—Flowers large and uneven, rather flaccid. Colour, deep plum-purple, with dark central blotch. Makes an effective mass early in summer.

Prince Bismarck.—Habit, good; growth close and moderate. Flowers, large, rounded, and stout, of good quality; rich plum-purple in colour. A capital summer-bedding kind.

Tyrian Purple.—A dwarf, robust, compact kind in habit. Foliage, glossy and rounded; flowers, very stout, of fine form, and of an intense rich velvety purple. An early-blooming kind, and one which is very constant all through the summer. One of the best of the purples.

Violet King.—Colour, deep violet-purple; flowers, large and of good form; habit, dwarf, and free; foliage, glossy and pointed; a variety which blooms early and freely all through the summer, and one which is most useful in the spring garden.

Queen of Scots.—Somewhat resembles Cliveden Blue Improved in habit, but the flowers are of a deeper purple; blossoms sparingly, and is not a desirable kind.

Plumripe.—One which belongs to the Tom Thumb section; habit, dwarf, and robust; flowers, small and rounded, thrown well

up above the foliage; colour, deep mulberry; blooms freely, and is very effective.

Black Varieties.

Pluto.—Habit, vigorous and good; flowers, of good substance, and rounded; might well be classed as a show variety; colour, deep slate black, but scarcely effective as a bedder.

Black Knight.—This name is commonly applied to these black self Pansies that are obtained from seed by this dark "strain." They come very true to colour as seedlings, but usually have a straggling habit of growth. Old plants saved from the previous autumn are useful in the spring garden, but the colour is of too leaden a hue to be attractive.

Miscellaneous Kinds.

Magpie.—An old and charming variety which flowers very early, and is singularly attractive in the spring garden. Blooms, medium sized, in colour plum-purple, blotched with white. It is a vigorous grower, but is not desirable as a summer bedder.

Sunshine.—Habit, compact and vigorous; foliage, glossy and pointed. Flowers, yellow, belted with orange-brown, which renders them most peculiar and attractive in appearance. Blooms early, and is very acceptable in the spring garden, but useless in summer.

Profusion.—Habit, dwarf, dense, and compact. Blooms most profusely and very early. Has one of the best habits of any bedding Pansy. Flowers, yellow ground, belted with reddish-bronze. Makes most effective lines or edgings in the spring garden.

Delicata.—Habit, compact and vigorous; flowers, large and round, lower petals pure white, upper petals slightly blotched with blue. Makes a most effective summer bedder.

Painted Lady.—A Tom Thumb variety of dwarf, vigorous habit. The flowers have the lower petals pure white, top petals violet-purple. Very free, and makes a charming bedder. A. D.

ROSES ON THEIR OWN ROOTS.

DWARF ROSES on their own roots are by no means so unattainable as some imagine. One of the most extensive as well as the most successful of the many Rose cultivators in the midland districts gathers all his best show flowers from plants on their own roots, raised by himself; and those who have seen his Roses must admit that they are marvellously fine. Now, it may be stated at the outset that there is one great advantage in having Roses on their own roots that will at once commend itself to cultivators, and that is the fact that they will stand exposure to hard weather better than worked Roses; and this has been repeatedly proved during the hard winters of the past ten years. In each instance of the occurrence of severe weather, the budded Roses were to a great extent cut down to the junction of the scion with the stock, and utterly killed; on the other hand, Roses on their own roots, though all the wood above ground was cut back, broke up from the roots in the following spring, and soon made good bushy plants. To secure Roses on their own roots, cuttings of the hard ripened wood of the summer's growth should be taken at the end of October or beginning of November, and inserted in lines in a spare piece of ground that is somewhat light and open, and if of a sandy nature so much the better. Each sort should be kept by itself, and planted about 3 inches apart in the lines, the lines being about a foot apart. A large proportion of these can scarcely fail to root; and the following summer, if transplanted in the spring, they make fine young plants and bloom well. In cold, moist localities, it would be well to give the cuttings some shelter during the winter. I once knew a Rose cultivator, living in a cold and bleak district of the West Riding of Yorkshire, who, finding some protection for his cuttings necessary, hit upon the following plan, and was highly successful with it. An open piece of well-drained ground was selected, and a narrow strip prepared by mixing with the soil sand and leaf-mould. In this, cuttings taken at the end of October were inserted in circular patches, in lengths of about 3 inches, cut off close under a joint, and having one or two eyes out of the ground when planted. A good watering was given in the morning of a dry day, just at the time of planting the cuttings, and then each circular group had placed over it damaged vitriol bottles, or carboys as they are sometimes termed. The bottoms of these, being broken, were cut away so that they could stand level, and when placed over the cuttings the bungholes were left open. During severe frost, or when raining, the bunghole was stopped up; but it was found to act injuriously, as the exclusion of air bred damp. Beyond keeping the cuttings clean from decaying leaves, no other attention was required; and in the month of May many of the plants were found to be well rooted, when they were transplanted into beds made of good soil, and soon grew into capital plants. Such, then, are two simple modes by which any one almost can obtain a supply of Roses on their own roots, without much expense or trouble. Quot.

RAISING CENTAUREAS FROM SEED.

Now that Centaureas are about to be stored for the winter, it is a good plan to select such as are most straggling for seeding purposes, and when employed in this way they should be divested of all rough base leaves, and also of all lateral shoots, retaining only the principal growths and such as are likely to bloom next year. To bloom Centaureas, however, and to induce them to ripen seeds, are two very different things; therefore, to accomplish the latter object, every endeavour should be made to cause them to bloom early. In spring, plant them out as soon as they can be safely trusted out of doors, and carefully prevent the growth of fresh side shoots. Thus treated, they soon get into bloom, and also produce seeds, which should be gathered when ripe, kept dry for a week or two, and then rubbed out of the heads and held in readiness for sowing. If sown in September in pots or pans filled with light sandy soil, placed in a moderately warm house or pit, and covered over with a pane of glass or a bell-glass, they will soon vegetate, and may then be pricked off into other pots or pans of light soil, and be left without the use of special glass coverings. After being pricked off, they should be kept throughout the winter quite close to the glass on a shelf in an intermediate house or warm greenhouse, where by spring time they will have formed fine plants, which should be potted off separately into 60-sized pots. In this way, and by placing them for a month or six weeks in an open frame before planting out, excellent plants may be obtained for bedding purposes. It is not absolutely necessary that the seed should be sown in autumn; it may be sown any time before the end of March, but spring-sown plants, owing to being forced so much in heat, are not so hardy as those raised in autumn. The lateral shoots now taken off Centaureas, to be kept for seed, should be struck as cuttings, selecting the hardest and most slender ones, and discarding such as are soft and succulent, which would be almost sure to damp off. W. F.

The Hollyhock Disease.—This is noticed in the September number of *Grevillea*, and has caused considerable damage to the plants on which it has appeared. It is said to be produced by a Fungus, the *Puccinia malvacearum*, which has not previously been observed in this country. It was originally described by Montagne as growing on the under surface of the leaves of *Althæa officinalis*, and this year has been found on *Malva sylvestris* at Salisbury, Chichester, and Exeter. My attention was called to it by Dr. E. Capron, who showed me living specimens of the Fungus on Mallows at Shere, in Surrey. Since my return to Eastbourne I have found it abundantly on the same species at Eastbourne and Pevensy. It is a curious fact that an undescribed Fungus should suddenly appear in so many localities at so great a distance apart. It appears as small yellow protuberances covering the under surface of the leaves of the Mallow, and these are so abundant and conspicuous that no one who examines an infected plant can escape observing them.—F. C. S. ROPER, in *Journal of Botany*.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Another Good Aster.—You must add to your list of good Asters *A. unilobatus*. It is most elegant.—H. N. ELLACOMBE.

Brugmansia sanguinea.—This is now in flower out of doors here, and will beat the heat in the frost-heap off.—H. N. ELLACOMBE, *Dittton Rectory, Bristol*.

Jasminum officinale as an Edging.—At St. Clare, Ryde, Isle of Wight, the common white *Jasminum* is used as an edging to some beds in the flower garden. Thus treated, it grows freely and thickly, and blooms satisfactorily. It also looks well in winter, as well as in summer.—F. W.

Hydrangea paniculata grandiflora.—I observe that this plant is beginning to claim attention in England, and most deservedly so, for it is certainly the finest of all the Hydrangeas, and also thoroughly hardy. I put out a plant of it from a 7-inch pot, three years ago last April, and this year it had about 100 fine heads of bloom on it. Last winter, which killed the native Vines and Peaches, left this *Hydrangea* unscathed.—J. TAPLIN, *South Anbury, New Jersey, U.S.*

Late Gloire de Dijon Roses.—The gardens at East Dene, Ventnor, Isle of Wight, are situated on a hill-side facing the sea. At the top are the plant growing and forcing houses, and on the dwarf walls of these are *Gloire de Dijon* Roses in profusion. Several dozens of them are gathered here every week, even up to Christmas; and by laying a few spare sashes along in front of the plants, they continued bearing much longer; indeed, in some mild winters they never entirely cease to flower.—W. F.

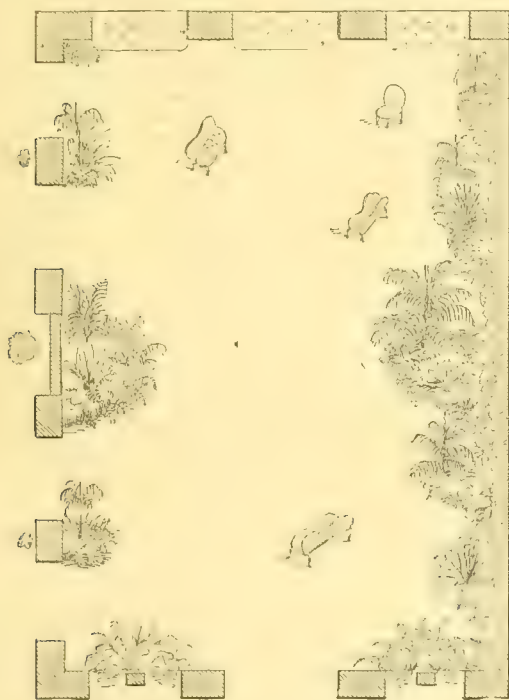
Veronica Andersonii.—A plant of this *Veronica*, at Upton House, Alresford, planted three years ago outside at the eastern end of a greenhouse wall, has remained there ever since without protection, not only uninjured, but has flourished and flowered profusely. It is now some 3 feet high, and 4 feet through, and has all through the autumn months yielded an unfailing supply of bloom, with which it is just now laden. If only for furnishing cut-flowers this *Veronica* is well worth growing.—W.

Seed from Double Flowers.—Do double flowers, especially such full ones as *Delphinium*, *Actæa*, and *Caryophyllus*, produce seed in the usual way?—FRANKLIN T. RICHARDS. [Entirely double flowers, i.e., those in which all the sexual organs are transformed into petals, cannot produce seed. When so-called double flowers yield seed, it is because, although many, perhaps, of the stamens have been changed into petals, a sufficient number of anthers remains to fertilise the ovary. Such being the case, the seed is, of course, produced "in the usual way."]]

THE GARDEN IN THE HOUSE.

PLANTS IN ROOMS.

WE have many plants that are well adapted for use as permanent ornaments for apartments, although there are but few in general employed for that purpose at present. Among the plants best adapted for the permanent decoration of apartments we may mention Ivy, Palms, Hard-leaved Ferns, such as *Cyrtomium* or *Nipholobolus*, and many of the more vigorous-growing American Aloes or Agaves. The common India-rubber, *Ficus elastica*, is also invaluable for indoor decoration, as are also many of the *Yuccas*. For the temporary decoration of saloons, drawing-rooms, or reception-rooms, we have a much larger variety of plants at our disposal. Many of the Palms and Ferns generally cultivated in stoves may be gradually inured to a cooler temperature before removal, and can then be used during mild weather without much injury. Our illustration shows the general arrangement of Palms, Ferns, and other choice plants used in the reception-room at Bridgewater House during the past summer. Besides these, however, the



Plants in Room at Bridgewater House.

grand staircase, corridors, and galleries above were profusely furnished with sparkling ice rockeries, groups of choice exotics, and cut flowers. The floor of the reception-room and the staircase were covered with crimson carpets, from which the fresh green-tinted Palms, Ferns, Grasses, and Selaginellas stood out crisp and bright, and interspersed here and there were delicately-tinted and fragrant flowers. Decorations on such a large scale are but rarely attempted; still flowering or foliage plants, judiciously arranged, are always attractive as indoor decorations. Hard-leaved Plants, as Palms, *Ficus*, Cycads, and *Aralias* are specially adapted for indoor culture, or for temporary groups, and can easily be cleaned and refreshed by occasional spongings with clean tepid water. Dust and gas, and excessive aridity in the atmosphere are always, more or less, injurious to all plants, but those we have named will stand better than most others under these unfavourable conditions. We have still much to learn with regard to the indoor uses of plants, and, in this respect, might do worse than imitate the Parisians, or inhabitants of Northern Germany, many of whom make room and window gardening contribute much towards the comforts and attractions of home.

F. W. B.

WINDOW AND BALCONY GARDENS.

BEAUTIFUL window-boxes covered with expensive tiles, attached outside of the windows or window balconies, serve as a support for boxes and pots, which are filled by the neighbouring florist and renewed whenever the condition of the plants demands it. All this is well, as it furnishes employment to the florist, and the plants are a source of pleasure to the passer-by, if not to their owner. However fine a show may be made by these boxes and balconies when the owner has only to order them to be kept in good condition and to pay the bills, they do not afford us the pleasure that do the attempts at floriculture to be seen in the humbler parts of the city where all that is done is through the personal efforts of the owners, to whom the most unpromising of tenement houses presents no obstacle to the cultivation of flowers, and where whatever show is made results from the personal care and attention of some loving hand. There is much to be said respecting window gardening among the poor, and even prizes are offered for the best specimens cultivated by them. In some of the unfashionable streets we find the most pleasant attempts at window and balcony gardening. Plank walks are laid in a manner not to injure the roof, and neatly-painted boxes are placed to form borders, which are filled with flowers often presenting evidences of skill and care. Nothing is more touching than this flower culture under difficulties. The love for a growing plant can not be repressed; and, if a window-box or pot cannot be commanded, table and kitchen utensils that have outlived usefulness in their proper service are made to serve as receptacles for plants. Many a time have we stopped and given more attention to these humble efforts than to those displayed at the houses of the wealthy. In America the recent laws obliging owners of tenement houses to furnish fire escapes, have furnished the inmates of such dwellings with opportunities for balcony gardening that they have been prompt to make use of. In some streets these balconies of the fire-escapes are perfect bowers of verdure, and climbers run from one to another in the most picturesque manner. We wish there was some way by which these flower growers could be reached, and that they could be taught to expend whatever money they devote to flowers to the best advantage. They buy what is offered in the markets, or what is brought along by hawkers, and, as these plants are often forced into flower, they are not the best for the purpose. Notwithstanding all the difficulties, the success of these humble flower growers is one of the pleasing features of city life.—*Hearth and Home*.

***Sedum carneum variegatum*.**—This pretty *Sedum* makes a very desirable little drooping plant, with which to face the edges of flower stands in drawing-room, ball-room, or corridor, and it retains its freshness a long time without requiring to be changed, unless a change should otherwise be desirable. It is also very useful for giving a dressy appearance to, and for hiding the wirework of, hanging baskets filled with plants, whose growth may not have so decided a drooping tendency. Its long elegant growths have a light and pretty effect when used sparingly round the upper tiers of tall glasses either for dinner-table or drawing-room decoration. I have always found the more frequent the changes of materials and style in this class of decoration, the more satisfactory it is. Too much repetition of anything, even when tastefully done, palls and satiates. This *Sedum*, like many others of the same family, also makes a very desirable hardy bedding plant, either for edging on the flat or covering the edges of raised beds, or for furnishing undergrowth for tall succulents or Palms, *Dracenas*, &c.; and it is also a useful plant in the rock garden. It is easily propagated in heat in spring, when every little bit will strike root freely.—E. H.

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

Yuccas and Ivy for Balcony Culture.—One of the balconies in Portman Square is now a picture of freshness and leaf beauty, even amid cold fogs and smoke; the balcony railings are covered with gracefully drooping Ivies, three or four plants of *Yucca recurvata*, too, in ornamental vases, break the formal line of the trellis below and give a finishing touch to the whole arrangement. One of the best of the kind, by-the-by, that I have seen for some time.—H. B.

Statice Bonduelli.—In an article in your paper, the other day, on "Ever-lasting and Dried Flowers for Winter Decoration," no mention was made of *Statice Bonduelli*. I have grown it two years, and find it a great acquisition for mixing with dried Grasses. Raised from seed early in the spring, and pricked out, it produced two crops of flowers, and is perennial if covered from the frost.—JOHN MARTEN, *Canterbury*.

Scent Powder.—A good recipe for scent powder, to be used for wardrobes, boxes, &c., far finer than any mixture sold at the shops, is the following:—Coriander, Orris root, Rose leaves, and aromatic Calamus, each one ounce; Lavender flowers, two ounces; Rhodium wood, one fourth of a drachm; Musk, five grains. These are to be mixed and reduced to a coarse powder. This scent on clothes is as if all the fragrant flowers had been pressed in their folds,

THE FRUIT GARDEN.

ARE DWARF APPLE TREES DESIRABLE?

My attention has been directed to this question by a paragraph in *THE GARDEN* (see p. 320). Dwarf Apple trees are now so generally cultivated throughout the country that most gardeners have formed some opinion regarding them from actual experience, and the greater number will, I think, admit that they possess many advantages over tall standards; they are superior as regards size and quality of fruit, besides being easy to prune both in winter and summer. But there are other questions respecting their treatment, about which "doctors differ," namely, root pruning, summer pinching, and lifting the trees at certain intervals. An experienced gardener in my immediate neighbourhood, who has grown dwarf Apple trees for a number of years, began his cultivation and treatment of them by lifting and root-pruning more or less every year; this practice he abandoned, and adopted the system of lifting at intervals of several years apart. I believe he practises neither of those systems at the present time, but does all his pruning above ground; he is greatly in favour of summer pinching. Many, like myself, would doubtless like to be furnished with the practical experience of those who have grown dwarf trees extensively. I planted a number of them about four years ago, and they are now beginning to bear fruit, of which I send you a specimen of what they have borne this season, and I should gladly adopt any method of culture that would be likely to secure me a continuance of such fruit for a succession of years. I have not yet lifted nor root-pruned any of my trees, but that some varieties would be benefited by so doing is evident; other varieties, again, owing to their natural habit of growth, and their fruit-bearing tendency, would, I think, receive injury by being subjected to any such operation. If, however, due care is taken to plant the trees near the surface root-pruning will not be necessary for several years at least. Before planting my trees, I trod the ground down firmly until the surface was quite smooth, and upon it I spread out the roots to their full extent. While the top was being held between the finger and thumb I spread about 2 inches of fine soil over the roots, and after watering they were mulched over with some well-rotted dung. Trees planted in autumn in this way require to be supported for the first season by a stick, but it ought to be taken away as soon as it can be dispensed with. It should never be allowed to remain as a permanent support to the tree.—J. T. [The fruit (as is not unusual with dwarf trees) was very fine.]

THE QUALITY OF AMERICAN PEACHES.

The New York Tribune returns to this subject, and brings Mr. Hoopes's testimony to bear this time:—"What you said about the comparative merits of English and American Peaches is by no means empty boasting, but sober truth. I have personally examined and tested the quality of European Peaches in some of the best orchard houses abroad, but have never yet seen any that would exceed our finest fruits grown in the open air on young healthy trees. There is a peculiar rich glowing colour and a luscious flavour in those grown here in a natural state, on our light sandy soils, and in our warm dry climate, that the most advanced systems of our transatlantic brethren can never hope to compete with. 'The shops' are no place to see the finest specimens; go to the best orchards and gather the ripe fruits fresh from the tree, and then, I venture to say, an 'English gardener would dare send to the table, under the name of Peaches,' these with impunity." We said nothing whatever against the capacities of the climate, the orchards, or the skill of the gardeners of America. We simply spoke of the fruit to be seen for sale in all the American cities, and we now say that this fruit is little better than the thinnings which are picked from the trees soon after the "stoning" in a good forcing-garden. And it did seem to us a pity that a noble fruit like the Peach (which, by the way, we think the most delicious of all fruits, when in its best condition) should be so miserably represented in the shops of New York in the very prime of the Peach season. As to the "artificial state," we do not see that a Peach gathered from a wall in England or France is grown in a much more artificial manner than one in an American orchard. But the finest Peaches ever grown in Europe are those gathered from beneath the glass in our lean-to Peach and forcing houses.

Mouldy Grapes.—Your correspondent (p. 334) is only one amongst many who have reason to complain of Grapes becoming mouldy, a disease very prevalent this season. Last week I made a tour through most of the best gardens in Hampshire and the Isle of Wight and in every Vinery not artificially heated and well ventilated, the Grapes were affected with mould. At Alresford the produce of two Vineries was completely ruined from this cause, but the worst case I met with was at West Cowes, where an entire crop was rendered useless from mould. This Vinery was in a rather shady situation, and there was no means for heating it. Another Vinery, containing one Black Hamburg Vine, with clusters large and black as jet, was also ruined through mould; a little fire-heat had been given at setting time, but none afterwards to dry up the damp. Fire-heat and ventilation, as recommended by Mr. Tillery, are the only means of saving such crops, and every gardener troubled with mould in Grapes should endeavour to explain this to his employer.—VINS.

Lady Derby Apple.—In the list of Apples given by Mr. Stacey (see p. 333 of *THE GARDEN*) is the description of an Apple called Lady Derby, as a kitchen fruit. There certainly must be two Apples with this name, or, if Mr. Stacey is right, I could name at least upwards of a hundred nurserymen, gardeners, and amateurs who are wrong; the error prevailing over an extent of some counties. What we have all been taught here to look on as Lady Derby is a very small, perfectly round, very early dessert Apple of a golden-yellow colour, streaked profusely with red on the sunny side; flesh, white and woolly; valuable as a very early dessert Apple; unequalled in its season (end of August and September). It is an Apple of so much character that it seems strange for it to be confounded with any other. Perhaps Mr. Stacey's Lady Derby is a synonym for some other kind, as his Duke of Wellington is (with us) Normanton Wonder and Dumelow's Seedling. Perhaps Mr. Stacey will kindly set us right in the matter.—T. WILLIAMS, Bath Lodge, Ormskirk.

Grapes in a Washhouse.—There is in the village of Rusholme, near Manchester, a crop of Black Hamburg Grapes produced in a washhouse, apparently a most unlikely place, and cultivated by an amateur who follows a very different business from horticulture. The washhouse, says the *Staffordshire Advertiser*, is placed with its end against the dwelling, covering the kitchen window, and is about 12 feet square, the walls 6 feet high all round, on which is placed a span-roof of glass, with three brick compartments for three vines. Four washerwomen scrubbing away, and over their heads 373 bunches of useful Grapes enveloped in steam, and no decay amongst them! The place is partially heated from a small boiler at the back of the kitchen fireplace with a flow and return of 2-inch gas piping. There is also a miscellaneous collection of plants in the washhouse.

Double-flowering Peaches Fruiting.—I have a curious phenomenon in my garden here, which I think worthy of mention. A double-blossomed Peach tree, planted as a merely ornamental flowering shrub nine years ago, and which has all along blossomed abundantly, last year set and brought to maturity a Peach of good size, but poor flavour. This year it has set and brought to maturity upwards of seven dozen, all of which are of fair flavour, and many very good for dessert. Is not this a rare occurrence? To-morrow I will send you two as a specimen. I may observe that the tree is now about 10 feet high, having never been pruned, and is partly damaged by the overhanging and overshadowing of a purple Beech tree. Off my wall trees I had scarcely any fruit, the blossom being destroyed by wet and frost.—RICHARD CAPARN, *Holbeach*. [Double-flowering Peaches sometimes set their fruit; but we are surprised to find yours of fairly good flavour—a fact which proves that hardy varieties of the Peach are worthy of being grown as standard trees in various parts of the country.—ED. FIELD.]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Winter Strawberries in California.—The climate of San Francisco and some parts of the Pacific coast, is such that Strawberries and fresh Asparagus are common there in the winter and autumn months, grown in the open air, of course.—R.

The Durandean Pear.—I saw this Pear at Sutton the other day, and was told it was good. Can you give me any information respecting it? K. [It is an October Pear, and well worth cultivation. It may be grown either as a pyramid on the Quince, or as a standard. Its flesh is melting, juicy, and pleasant.]

The Eve Apple.—We have about Coventry an Apple under this name, of which I can find no mention in Scott's "Orchardist." Is it a synonym of some other kind?—A. [Yes; it is the Early Red Margaret, well known in Ireland under the name of Eve Apple, and in some parts of England as the Red Juneating. It is a good early dessert Apple when eaten as soon as it is gathered.]

THE PROPAGATOR.

THE ACTION OF LIGHT ON SEEDS.

SINCE the 19th of March, the date on which the experiments alluded to last week (see p. 354) were commenced, I have conducted a number of experiments on the same subject with opposite results. These latter experiments having been repeated with the same results each time, claim my recognition, and lead me to decide that light is injurious to germination. On the 17th June last, five pots were prepared by inserting a number of Mustard seeds in cotton wool, kept constantly wet with water. No. 1 was allowed to remain in daylight; 2, yellow light; 3, blue light; 4, red light; 5, darkness. The order in which the seeds germinated is as follows:—

NUMBER OF SEEDS GERMINATED IN					
Date.	Time.	No. 1.	No. 2.	No. 3.	No. 5.
June 21st	8 a.m.	0	0	0	0
" 22nd	8 a.m.	1	2	0	1
" 23rd	8 a.m.	2	3	0	1
" 24th	9 a.m.	4	5	0	2
" 25th	8 a.m.	5	7	0	1
" "	9 p.m.	6	8	0	1

Again on the 7th July, pots were prepared as before, the results being as follows:—

NUMBER OF SEEDS GERMINATED IN					
Date.	Time.	No. 1.	No. 2.	No. 3.	No. 5.
July 11th	9 a.m.	0	1	0	2
" 12th	8 a.m.	2	2	0	3
" 13th	8 a.m.	2	3	0	5
" 14th	8.30 a.m.	3	5	0	7
" 15th	8 a.m.	4	6	0	8
" 16th	8 a.m.	6	8	0	9

These experiments were repeated again on the 20th, and, like the previous experiments, go to prove that the daylight impedes the process of germination, or, rather, that seeds in darkness germinate the soonest. The results were as under:—

NUMBER OF SEEDS GERMINATED IN					
Date.	Time.	No. 1.	No. 2.	No. 3.	No. 5.
July 23rd	8 a.m.	0	0	0	1
" 24th	8 a.m.	1	1	0	3
" 25th	9.30 a.m.	2	2	0	5
" 26th	9 a.m.	3	4	0	7
" 27th	8 a.m.	4	6	0	8
" 28th	8 a.m.	6	7	1	9
" 29th	8.30 a.m.	6	8	1	9

From the fact that the leaves of plants absorb carbonic anhydride, or carbonic acid, which by sunlight is deoxidized, the carbon thereof—combining with the substances acquired by the roots from the earth—forms the carbonaceous part of the plant, and as this only takes place under sunlight, we may reasonably conclude that sunlight exercises a deoxidising influence. So then its influence must be injurious to chemical actions, in which oxygen is required, especially when the substances are carbonaceous compounds. As chemical action requiring oxygen must take place during the germination of seeds, we have every reason to believe in the accuracy of the experiments of June 17th, July 7th, and July 20th, which show that light is injurious to germination. I find that oleaginous seeds lose a portion of their fatty matter by germination, especially when the germination was effected in darkness, a portion of the fatty matter being possibly changed into an acid. The seeds chosen for experiment were the Radish and Poppy. 50 grains of Radish seeds contain, before germination, 17.9 grains of fatty matter, while after germination, in light, for six days, only 8 grains; after germination, in darkness, 7.6 grains. 50 grains of Poppy seeds contain, before germination, 19.55 fatty matter; after germination, in light, for six days, only 9.75; after germination, in darkness, 9.05.

W. H. WATSON.

Braystones, Beckermat, near Whitehaven.

PROPAGATING WIGANDIAS.

THESE may be readily propagated from seeds sown now or in spring, in a stove temperature, and pricked off as they are fit to handle. Use sifted peat, loam, and white sand, in equal proportions, for sowing in, and barely cover the seeds; then place a pane of glass over the pots or pans containing the seeds until they begin to vegetate. Prick the plants off into a similar mixture, and when they grow so much as to rub against one another, pot them singly in thumb-pots in two parts loam, one of peat, one of leaf-mould, and some sand,

and afterwards shift them as they require it. From pieces of the roots, too, the stock may be increased by the following means:—In lifting and discarding spent plants, save the thick fleshy roots, cut them up into pieces about an inch long, and lay them thickly on the surface of a pot filled with compost as for seed, covering them just sufficiently to bury them. After a time, they will push forth eyes like an Achimenes, and they may then be taken and potted separately in thumb-pots, and afterwards undergo the routine of cuttings, being careful not to permit more than one shoot to remain on each plant. Another good method is to keep back a plant or two from amongst those planted out in summer, and retain them starving in their pots all summer. In October, or as soon before the end of February as is convenient, plunge the pots in gentle heat in the stove, and take off the tops and strike them as cuttings. With plenty of water, and stimulus from increased temperature, every joint sends forth a shoot or lateral, beginning at the top and moving downwards, and all these may in their turn be appropriated for the same purpose. The cuttings strike freely in an enclosed case, in pots filled to within an inch of the top with peat and sand in equal proportions, and surfaced with pure sand. A bell-glass placed over the pots serves the purpose almost as well as enclosed cases. In propagating these from eyes, cut the shoot half an inch, or thereabouts, below the joint, in order to leave enough to keep it firm in the ground, remove the leaf stalk to within an inch and a half of the soil, and also leave about an inch of the bare stalk of the shoot above the eye. A curious fact connected with this surmounting portion of the stalk is, that it will callus just like the base, and instead of roots will form a quantity of young shoots, all of which may be taken off as they gain a little strength, and be potted and otherwise treated as cuttings or individual plants. After the decapitation of the stock plants, more particularly in the case of *W. latifolia*, the incision becomes callused, as it were, and a quantity of little shoots are also produced in this case. Instead of keeping a few stock plants all summer, a few may be lifted in good time from the open ground and potted for propagating purposes.

W. FALCONER.

PROPAGATION OF THE NEWER CONIFERÆ.

By J. ALEXANDER, in Transactions of the Scottish Arboricultural Society.

EVERY plant can be reared from its seed, and theoretically, this ought to be the best and surest mode of propagation. But as this cannot always be done, other modes of propagation have been resorted to, such as by cuttings and grafts. We at present treat only of the Coniferæ or cone-bearing trees and shrubs, and shall refer to them—First, of those reared from seeds; secondly, from grafts; and thirdly, from cuttings.

Coniferæ from Seeds.

The cones should be gathered in the winter season, and afterwards exposed to the sun, or to a gentle heat on a kiln, to facilitate the separation of the seed from the cones. In the Scotch Fir, and others of like nature, the cones open in a very short time after they are treated as above. Those of the Weymouth Pine, Silver Fir, and Balm of Gilead Fir, give out their seeds with still less trouble; while, on the other hand, the cones of the Pinus Pinaster (Cluster Pine), Pinus Pinea (Stone Pine), and allied species, do not open their scales for several months, although treated in the same manner. The cones generally opened by kiln heat are those of the Scotch Pine, Spruce, and Larch. But there are others, as those of the Cedar of Lebanon, which should be left for a year at least before the seeds are taken out; this being necessary on account of the soft nature of the seeds and the great quantity of resin which the cones contain while growing, and which they discharge on being kept for some time after they are gathered. A fact which the writer has verified during the last two years may be mentioned as a guide to cone gatherers. In the year 1870, twenty cones were gathered from each of ten different trees, whose ages were approximately ascertained by counting the concentric circles in other trees felled beside them. The cones were carefully opened, and all the seeds of the ten different sets sown in separate beds, when the following was the result:—The seeds of twenty cones from a tree

300 years old produced	10 plants	100 years old produced	196 plants
250 "	13 "	50 "	104 "
200 "	50 "	15 "	46 "
150 "	74 "	10 "	40 "
125 "	106 "		

The same experiment was tried in 1871 with other trees, when

the result was much as in 1870. It would thus appear that the best trees to take cones off for seed are those averaging about 100 years. Above 100 or 120 years the seed becomes less fruitful; at any rate, the fact remains that the cones of trees, when they reach their prime, are more fruitful than those of old ones. April is the best season for sowing all kinds of Conifers, should the weather prove favourable, in order that the seeds may sprout the earlier. It is a good plan to place them in a bag, and then have the bag steeped in water for two or three days. After this let the seeds be taken out and dried gently in the sun before being sown. The soil should be soft and rich, mellowed by the preceding winter's frost and carefully dried and raked as fine as possible. The rarer sorts are generally grown in pots, but the more common in beds 3½ feet wide. The seeds of the Scotch Pine require a covering ½ inch in depth; those of the Weymouth Pine ¾ inch; and those of the Stone Pine, 1¼ inch. The Cedars are generally sown in broad pots or boxes filled with light sandy loam and covered ½ inch. In the case of the Larch the seeds require ¾ inch, while, again, those of the Spruce Fir require about an inch. Those of the Silver Fir, and Balm of Gilead from ½ to ¾ inch. The seeds of the black and White American Spruces are smaller than those of any of the preceding species, and therefore require a light covering. It is sufficient to cover these seeds and no more. Strict attention is required, both as the quality of the soil and the thickness of the covering; for although the plants from these seeds prove extremely hardy when grown up, yet they are very tender in infancy. It is a common practice to leave the plants in these beds for two years, but this is not to be recommended. They should, if possible, be lifted in the end of the first year in March or April, according to the weather, and then bedded out in lines 6 inches apart with thirty or forty plants to the lineal foot. At the end of the second year, they should be again lifted, and this time lined in rows 9 inches apart, and about eighteen or twenty plants to the lineal yard. In the course of the third year these plants are fit for being transplanted into a forest or pleasure ground, as the case may be; they will then be from 6 to 9 inches high, and if larger plants are wanted they may either be left in the lines or transplanted to others.

Coniferæ from Grafts.

Trees not too full of resin can be propagated by cuttings and grafts, and often make good plants. The process of grafting is well known to every nurseryman, and need not be here explained. But it may be remarked that the graft commonly known as "tongue upon tongue" is superior to the other modes, such as "side" and "cleft" grafting, and "crown" grafting. The great art consists in fitting exactly the inner bark of the scion to the inner bark of the stock, and keeping them in close contact till union takes place; and the "tongue" or "whip" grafting, as it is sometimes called, answers this purpose best in case of Coniferæ, for, among other reasons, it admits of being performed even on the smallest twigs. The grafts will not succeed unless the scion and stock be of the same species, or, at least, of the same genus. The scions are generally young twigs of last summer's growth or young branches, and are grafted on to the stocks in the case of Coniferæ, immediately after they are cut from the parent stem. This should be done when the sap begins to ascend freely through the inner bark of that which is to form the stock. The proper season is easily known from a tree putting forth its buds. Of the Coniferæ from grafts or cuttings all the Picea and Pinus are best from grafts when seeds cannot be got. The Piceas will graft and grow well on the Silver Fir (*Picea pectinata*). The Pinus genus takes on different varieties of stocks. For example, those that bear a resemblance to the Scotch Fir (*Pinus sylvestris*) grow very well on that species as a stock. Varieties such as *Pinus monticola*, *P. Lambertiana*, &c., make the finest trees on *P. excelsa* or *P. Strobus* (Weymouth Pine). All the varieties of *Abies* are grafted on the common Spruce, and all the *Biotas* and *Thuja orientalis* varieties on the Chinese Arborvitæ, and *Cephalotaxus* on the common Yew. The *Cupressus Lawsoniana*, which is easily reared from seed, can be used as a stock for all its varieties and those of allied species.

Propagation by Cuttings.

These should be taken from the side shoots of plants when the sap is in full motion, as in the case of grafts. They should consist of last year's growth with a small part of the previous year's wood. The old wood causes them to strike better. The cuttings from Coniferæ will grow in almost any soil, but a loamy and cool sub-soil is best for bringing the trees to perfection. The varieties of *Retinospora* make fine plants from cuttings, as also, those of Yews and *Thujopsis*. Wellingtonias are reared better from cuttings than grafts, but the variegated forms are commonly grafted on the original species. Cedrus, *Cephalotaxus*, *Cryptomeria*, *Dacrydium*, *Podocarpus*, *Prumnopitys elegans*, and *Pseudo Larix*, with many of the *Cypresses*, can be propagated by cuttings. Of Conifers, not

already mentioned, the following may be propagated, either by cuttings or grafts—most kinds of Junipers, the *Libocedrus chilensis*, *L. decurrens*, *Torreya grandis*, *T. taxifolia*, and the white Cedar. We have now seen how the different varieties of Conifers are propagated from seeds, grafts, and cuttings; and it may be repeated that the first is the best mode of propagation were practicable, and of the other two, rearing from cuttings is generally to be preferred to that from grafts, for the latter often send out lateral instead of upright leaders.

THE ARBORETUM.

THE NEW GROVE OF BIG TREES.

In the GARDEN (see p. 332) mention is made of a new discovery of *Sequoia gigantea* on the Coulterville route, from the Yosemite Valley. I passed on the Hardins route (which is identical with the Coulterville for a large portion of the distance), from the Yosemite Valley to Stockton, in October 1870, and about thirty miles S.W. of the Valley, passed through a grove on, or near, the banks of the Tuolumne river in Tuolumne county. I measured one tree whose trunk was 70 feet in circumference 4 feet from the ground. There are also thirty trees in this grove, one of which is decidedly the best grown and handsomest tree of any I saw in either the Calaveras or the Mariposa Grove. I measured the Grizzly Giant in the Mariposa Grove and found it 70 feet 6 inches at 8 feet from the ground. It is stated to be 30 feet in diameter; the fact is, this specimen, like many others, swells out towards the root, and I consider the dimensions mislead one in forming an estimate of the size. I took my measurement where the trunk is straight. I must confess these gigantic trees did not at first strike me with the wonder I had laid in store for myself on seeing them. The fact of my having ridden for days through forests of giant Pines, *P. ponderosa*, *P. Lambertiana*, and *Abies Douglasii*, whose trunks I measured and found to be from 18 to 26 feet in circumference, had so prepared or accustomed the eye to such (to an Englishman) large trees, that the *Sequoias* did not at first strike me with that amount of surprise I expected them to do. I collected some seed, and find I had no difficulty in raising seedlings in this variable climate (N.W. Yorkshire). One fact struck me forcibly while I was in the Mariposa Grove as well as that of Tuolumne, namely, the total absence of seedling plants or young trees, which led me to put the inquiry, are these mammoth trees the last of their race, and, like many of the tribes of red men, to be wiped out in the next generation? YOSEMITE.

A Pine Forest in Switzerland.—There is a wondrous charm about these illimitable forests of Pine which for miles and miles clothe the huge buttresses of the Alps. The charm is intensified at early morning, when a delicious fragrance steals up from innumerable wild flowers in the various openings among the trees, and from the green Moss which clothes with such velvet softness the rocks lying half hidden in the rich verdure. Variegated Lichens enrich with the colours of the kaleidoscope these rocks and river-stumps; wild Strawberries peep out with their pretty pink eyes from the shady Grass, and if we chance to look upward from the wealth of beauty below through the rifts in the dark foliage overhead, some pinnacle of snow is seen soaring into the deep blue sky, as soft, and white, and still as the wing of a sleeping swan.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Paulownia Wood.—This is said to be capable of taking a good polish May 1, therefore, ask some of your readers to kindly inform me where it can be obtained in large pieces.—M. B.

Beech Timber.—A Wiltshire paper states that at the annual sale of Beech trees on the estate of Earl Bathurst, conducted by Mr. George Jones, at Supperton, 43 trees, containing by estimation less than 23,000 feet of timber, realized £1,694. Five lots situate in the Beech Coppice, containing 152 trees, very clean and long, made £617.

Cotoneaster Simmondsii.—I have used this charming plant, with great success, for two years for decorating dessert dishes. I merely get a wire hoop of the same size as that of the dishes. Round this I tie, neatly, sprays of the *Cotoneaster* with berries on it, and put the same round the dishes, on which they have a very chaste and fine appearance.—R. G.

Protecting Trees from Rabbits.—Would it injure young trees to put tar round them to prevent rabbits from destroying them? Last year I had several thousand more or less injured by these vermin. I have now more than 7 acres to plant; therefore any kind of wire protection is out of the question.—CHARLESTOWN. [Tar is objectionable, as it is injurious to young trees. A simple mixture of soot and cow dung, made thin enough to be put on with a brush, will help to ward off the attacks of rabbits during ordinary seasons. Blood sprinkled on newly planted trees has also been found to be effective for a time. Wire netting or tying Birch or Heath round the necks of the plants, are the only really effectual remedies in severe seasons where rabbits are numerous.—G. B.]

LONDON GARDEN LANDSCAPES.

VIEW IN ST. JAMES'S PARK.

It is a mistake to suppose that there are no landscapes in towns. Wherever there are trees and water, landscape effects necessarily produce themselves with more or less beauty, according to the extent and character of the water and foliage. In the case of artificial water, with trees planted about it, it is very easy so to manage matters that no beauty whatever is obtained, and perhaps the contrary, examples of which might be cited by the score in and around London. The plantations in St. James's Park are not, however, of that unfortunate character. They were commenced many years ago to vary the monotony of the flat turf on either side of the water, and were made with a certain amount of taste and judgment; so that, when their matured growth allowed of plentiful thinning, and so obtained open spaces between and about

gardener lays out his plan, he would be artistically wrong to endeavour, by his work, to conceal noble architectural objects from the view. In extensive parks combined with decorative gardens, architectural features have to be specially furnished by the architect, at great cost, as such objects in park and garden scenery on a palatial scale are often deemed as necessary to a complete place as the green slopes and the noble trees themselves. Indeed, the landscape gardener of the last century was no other than the architect himself, the decorative horticulturist only coming in to play a secondary part; so essential, and indeed all important were the "temples," grottoes, terraces, and alcoves considered, in the formation of parks and gardens, even so late as the days of Sir William Chambers. Although the introduction of over elaborate garden structures is no longer a necessarily conspicuous feature in park and garden scenery in the country; yet, in town gardens, glimpses of architecture, from different points, should always be carefully studied



View across the Ornamental Water in St. James's Park.

the best-grown trees, landscape effects were produced of very pleasing character from several points of view. London landscapes would scarcely be complete unless they presented glimpses of architecture; and from the point selected by the artist for the present sketch, peeps are obtained of several salient features of the Houses of Parliament and other buildings. In a London landscape, the enriched lines of palatial architecture, in contrast with the gracefully-irregular forms of the trees, produce combinations of form which are highly agreeable to the eye, and at the same time undeniably appropriate. It would, in such situations and under such conditions, be a great mistake to attempt to "plant out" such suitable features. "Planting out" a neighbour's villa, in the country, where comparative isolation and uninterrupted views of wood and field and stream are the pleasures of the eye most chiefly sought, is a legitimate object, and the repose of your home landscape is thus restored; but in towns, when the landscape

whenever such favourable opportunities occur, as in the case of St. James's Park. As a rule, the horizontal lines of Roman or Palladian architecture, form a better contrast to the spherical outlines of the tops of many of our trees, and especially to the spiral growth of Poplars, or most of the Conifers; yet the Gothic pinnacles of the Houses of Parliament certainly produce a fine effect, as they are seen above the trees of St. James's Park in several places, where the outlines of the full-grown foliage dips below its ordinary level, as shown in the annexed engraving. The most beautiful example I have ever met with of glimpses of noble groups of architecture seen from the midst of exquisite garden scenery formed of multitudes of beautiful trees, for which the fairest regions of the earth have been ransacked, is that furnished by the Botanic Gardens in Edinburgh, from the rocks and slopes and recesses of which such glimpses of the monuments of the Calton Hill, and other points of the picturesque city, are obtained as could

not be matched in any other city in Europe. These interesting peeps have been carefully studied and watchfully tended from year to year by the curator, who is justly proud of the results of these truly artistic arrangements. The foreground of trees and slopes and rocks from which these exquisite vistas are obtained are so picturesquely beautiful that they form models such as a landscape painter would grow enthusiastic over. I longed to sit down myself, pallet and paper in hand, and essay a sketch or two with my own clumsy pencil; but felt that such models belonged to art-students of a far higher class.

H. N. H.

SOILS, FERTILISERS, &c.

ON THE CAUSES OF FERTILITY OR BARRENNESS OF SOILS.*

THE causes which operate in producing the fertility or barrenness of soils have hitherto to a great extent been shrouded in mystery, not from want of study, but owing to the difficulties which meet the inquirer at every step, and the fact that most important results frequently depend upon causes which have eluded the search of the experimenter. The science of chemistry it was hoped would afford the key wherewith to unlock the mysteries of nature; but, though its discoveries have conferred much practical benefit on the agriculturist, it has, up to a very recent period, effected comparatively little towards settling the causes of fertility or sterility. The theories of scientific men led us to expect that fertility depended upon the presence of certain mineral substances, which were found invariably present in the ashes of plants; and the analysis of a soil it was believed would confirm the practical experience of the farmer; these hopes have been falsified except in the few cases of almost simple soils, such as pure clays and sands. In all other instances, the analysis presented the existence, in varying proportions, of those substances supposed to induce fertility equally in the barren as the fertile soil. The proportion of the various ingredients was next proposed as the sign of quality; but researches into the amount of inorganic matter abstracted by each crop has demonstrated that soils of a mixed character contain abundant supplies of mineral food for numerous crops. It is probable that fertility depends more upon the peculiar condition of the saline matters, than their actual presence or absence in a soil; thus, for example, we can imagine a clay soil, so full of water that the air could not penetrate and act upon the various salts, which, though of the right kind, might be in an insoluble and therefore useless condition; but the same soil, subjected to thorough drainage and pulverisation (physical change of its particles) might become very fertile, owing to the reviving influence of atmospheric action, and the increased temperature which would follow removal of the water, &c. It is for these reasons that fertility often appears to depend more upon physical than chemical causes, whereas the two are intimately combined; for instance, a pure sand may be physically in the best possible state, porous, warm, capable of retaining moisture, and yet totally barren from the absence of those chemical compounds upon which the plant feeds; and, *vice versa*, the storehouse may be full, nature's laboratory may contain abundance, and yet the physical condition may be such as to prevent those farther changes requisite before the food can be fit for use. Before entering more particularly into an examination of the physical properties of soils, it may be as well to glance very briefly at their origin. Soils are derived from three sources:—First from the decomposition of the rock on which they rest. Secondly, from the decomposition of a drift formation, to which, in earlier days of geological knowledge, the term Diluvium was applied, on account of their supposed formation by the Noachian Deluge; a view long since found untenable, and the name has given place to that of erratic tertiaries, because most of these beds seem referable to a period posterior to the tertiary deposit. Various theories have been broached to explain their formation; the most plausible refer them to a period immediately preceding the present, when the earth was about to emerge from its watery covering, and when the natural elevations of its surface would cause mighty currents, carrying away in their course vast quantities of matter from the higher points, depositing them according to gravity at nearer or greater distances from the parent bed: the heavy matters would be deposited first, afterwards the finer and lighter ones. The direction of these currents seem to have been generally uniform, extending in this country from the north and west; consequently we find the post-tertiary erratics ranging from the west and north towards the east and south, fringing the western coast up the valleys,

extending into Scotland, on either side of the Pennine chain or central ridge of England, which appears in most cases to have formed a barrier to further progress, though this is occasionally surmounted in the lowest spots. The character of these deposits, and consequently the soils found upon them, present every variety of form and nature, from the blowing sands to the huge boulder stones, from the fine arenaceous to the coarse gravelly soil. Thirdly and lastly, soils are derived from alluvial deposits found occupying the line of most of the great rivers in this country. Accumulated by water in its passage through various strata, they are of a very mixed and fertile character, especially near the mouths, where the currents of salt and fresh water mingling caused the death of multitudes of Infusoria, which sinking down were deposited along with fine mud, and affect the value of these soils to a considerable extent; similar processes may be seen going on at the mouths of many rivers at the present day. The sedimentary deposit has, in more than one instance, been turned to advantage in damming up the stream and retarding its onward progress, until all the materials gathered together during its long journey through various strata were deposited as mud, when it was allowed slowly to pass off into the sea.

From whichever of the above sources soils are immediately derived, they are all primarily produced by the decomposition of the older rocks. Thus the granite, upheaved into mountain chains and lofty hills, bare, rugged, and uncultivable, is the parent of the rich soils found in the surrounding valleys; indeed all clay soils have resulted from the decomposition of granites containing felspar. Most soils are formed by the decomposition of the beds beneath, assisted by the deposit of animals and the growth and decay of vegetable matter. The principal agent is moisture, which swells out the particles, diminishing the cohesive attraction, and preparing the way for the chemical and mechanical action of the atmosphere, which gradually separates the various substances from previous affinities, and prepares, by new combinations, food for the vegetables which speedily appear. How the plant first originates is often mysterious; whether a seed may be transported by birds, or whether nature has the power of spontaneous production, is a question which might form subject for curious and interesting investigation, but which is quite foreign to the present paper. Yet I cannot forbear mentioning a fact which I have from good authority, as it goes some way to prove the latter hypothesis:—The shepherds of the moors in Scotland are sometimes in the habit of firing the Heather; the ashes remain on the surface; and, without any seed being sown, a rich herbage of Dutch Clover springs up.

The lower forms of vegetable life first appear in new land, or more properly, in disintegrated rock, and, by their roots clinging to and intersecting the mass, as well as by the protection afforded to the surface against the destructive effect of heavy rain, &c., materially assist in the process of forming a soil. The action of frost is also very important, the expansion of the moisture in the soil or rock breaking up the particles, and preparing the way for the chemical forces to act; these are chiefly the oxygen of the air and carbonic acid gas, dissolved in rain water; both possess powerful affinities for many mineral substances—oxygen forming oxides, generally more soluble and looser in nature than the original minerals; carbonic acid acting upon lime, magnesia, and the alkalies, destroying previous combinations, and forming soluble carbonates. The character of a soil will depend upon the nature of the parent bed; thus soils from granite consist principally of silicate of alumina, with soluble alkalies and iron, all more or less clayey in nature and destitute of lime. The soils from the chalk (especially the upper beds) contain large quantities of carbonate of lime with alkalies and iron, but very little clay, and form light free-working soils. In the former case, the felspar of the granite is the substance from which the clay soil is derived. Felspar consists of:—

Silica	...	...	...	...	...	...	...	64
Alumina	...	...	...	...	...	...	...	20
Potass	...	...	...	...	...	...	...	11
Lime (trace-)	...	...	...	...	...	...	...
Oxide of iron	...	...	...	...	...	...	...	1.75
Water	...	...	...	...	...	...	...	2.75
								99.50

It is found impossible to classify soils geologically, because the beds vary so extremely, and the soil has so frequently been derived from various sources; therefore we have recourse either to physical or chemical distinctions: the former, being most easily recognised, are usually adopted.

Mechanical Distinctions of Soils, as Cohesiveness or Porousness, Coarseness or Fineness of Granulation.

We are in the habit of speaking of soils as light or stiff, loamy or marly, yet from such descriptions little correct knowledge of their real nature can be gained. It is true that the primary forms of soil, such as stiff clay, pure sand, chalky or peaty soils, may be well

* From a Prize Essay by John Coleman, in the *Journal of the Royal Agricultural Society*.

expressed by such terms; but in nature we have most frequently to deal with combinations of the above in the most varied proportions; very frequently the distinctive characters are completely masked from observation, so that the appearance alone would often lead to very erroneous judgments on the qualities of soils. A good classification, based upon the physical condition and chemical combinations of the various ingredients, is much wanted. In the absence of such I shall adopt the faulty method of dividing all soils into four groups, bearing the names of their chief constituents:—Argillaceous or clay soils, so called because clay (argilla), or alumina, forms the principal ingredient. Sir Humphry Davy considers the term should only be applied to such as contain above 1.6th of impalpable matter which does not effervesce in the presence of an acid. This division is again divided many times according to the presence of other substances, such as sand, lime, or peat, causing variations from the original type. Silicious soils are those which contain a large amount of silica or sand in an uncombined state. Davy considers the term applicable only to soils containing 7.8ths of their bulk of sand. Perhaps this is going too far; we may with more propriety allow upwards of seventy per cent. as the minimum quantity. Calcareous soils contain a large proportion of carbonate of lime, above twenty per cent.; and lastly, humous or peaty soils, which include all that contain above five per cent. of vegetable matter. Such soils generally result from the decomposition of peat bogs; they are easily recognised by their dark colour and small specific gravity. We shall proceed to consider these divisions in detail.

Clays.

These soils are very tenacious, which is due to the alumina. Plastic when moist, they are readily moulded into any form, hence their value for the manufacture of earthenware, and the purer and least productive soils are best adapted for this purpose. When dry, clay falls down into an impalpable dust, but in nature clays generally bake, that is, dry on the surface, but remain moist underneath, forming masses as hard as iron, and very difficult to cultivate. The contracting influence of heat causes these soils to crack during dry weather; the fissures thus formed are often of considerable size, due to the closing of the particles kept apart by the moisture, which clay so readily absorbs. The presence of moisture, by excluding the atmosphere and the sun's rays, and by constant evaporation from the surface, causes clay soils to possess a lower temperature than any other; they are eminently cold in a natural state. This property of absorbing and retaining moisture and gaseous matter, which may be turned to the first advantage under judicious management, often renders clay soils unfit for cultivation in a natural state. The term heavy as applied to clay soils is not in reference to their specific gravity, which is less than that of sands or calcareous soils, but in consequence of their consistency making them difficult to work. Their agricultural value varies extremely, depending principally upon the proportions of the various ingredients as affecting the physical and chemical character, and we have examples of the poorest as well as most fertile soils. Pure clay does not enter into the composition of plants, nor as far as we know (except in very minute quantities) is it decomposed into its elements; consequently a soil consisting of it only would be perfectly barren, although possessing great powers of absorption. Poor clays are the least desirable of all soils, on account of the heavy expense of cultivation, three, and more often four, horses being required for even the shallowest ploughing. Great judgment is required to know the proper time to work such land; as in wet weather the pressure of the hoof will puddle the sub-soil into pans of the most impervious character. Fortunately very few are so simple in their nature as to be unfit for cultivation. More frequently the poverty is due to the saturated condition of the mass preventing the atmosphere penetrating and effecting those changes in the ingredients (thus rendered inert) which are indispensable before food can be provided for the plant. Before expending capital in reclaiming, it is highly important to ascertain whether the ingredients are of a nature to warrant it, and here we perceive an instance of the important assistance afforded by the science of chemistry, informing us, as it does with full certainty, what the soil contains, and whether it is likely to yield a fair return for our capital. Having satisfactorily settled this point, we may fearlessly proceed to invest our money, first by thorough drainage, and afterwards in pulverising, so as to admit the atmosphere, which readily takes the place of the moisture removed by our drains. Any advice as to the best methods of draining would be out of place here, and it is to be hoped, unnecessary; since landowners and intelligent occupiers are by this time firmly persuaded of the vital importance of deep drainage, and the utter absurdity of placing the drains just beneath the ploughed, as was the practice twenty years ago. The advantages are incalculable; cultivation is lightened very often one-horse power; the temperature is raised; germination more rapid and certain;

harvests accelerated ten days to a fortnight; supplies of food often apparently inexhaustible are eliminated, which would otherwise have lain dead and useless; and the number and variety of crops increased. The surface ceases to bake or puddle, hasty downfalls find ready access, and instead of standing on the surface, stagnating in the sub-soil, or running off with the best parts of the soil, the rain-water quietly passes away into the drains, fertilising in its passage. It may be stated as a rule that all real clay soils resting on an impervious sub-soil, require drainage; without it they must be looked upon as the least remunerative; by its aid and judicious cultivation they may be rendered among the most productive.

The practice of paring and burning the surface of stiff clays, much followed in some districts, may be noticed as bearing on the physical condition of such soils. The operation is usually performed at that period in the rotation when the land contains the most rubbish, as all surface weeds, insects, &c., are destroyed by the fire. The process is very simple. A paring-plough, either drawn by horses or pushed by men, slices off about 2 inches of the surface, turning it over, in which state it remains till thoroughly dry. It is then got together into small heaps and burnt; afterwards the ashes are spread and ploughed in. If lime is present in any quantity, the first shower causes the ashes to fall in a coarse powder, which gets thoroughly incorporated with the soil, the lime furnishing valuable food both directly and indirectly to the succeeding crop. The effect of burnt clay is principally mechanical, opening the soil and rendering it more porous. It was formerly believed to absorb ammonia from the air, but recent experiments throw doubt upon this. The practice is found to answer exceedingly well, and, even if we do not burn the soil all over the field, we should never neglect any opportunity of obtaining burnt earth. Borders of hedgerows, cleanings out of ditches and corners of fields present excellent material for the purpose. The principal clay districts in this country are those of the London and Plastic beds, occurring in the south-eastern counties; the Wealden, formed in parts of Surrey, Sussex, and Kent; the Lias, forming a narrow band, which runs from S.W. to N.E., right through the country from the Vale of Gloucester to Yorkshire; the clays of the Old Red Sandstone, occurring in Devonshire; and the clays of the older rocks, developed principally in Wales. Besides the above a number of smaller beds occur, as clay is found in almost every formation; indeed, very few soils are devoid of some portion. We have hitherto spoken of those soils which contain a large proportion of clay; the most fertile districts contain clay mixed with certain proportions of sand, known as clay or sandy loams. The value of such soils consists in their containing sufficient absorbing and retentive power for vegetation, at the same time being open and to some extent porous; in fact, Nature has in these cases prepared the soil and saved much of the labour necessary to the stiffer clays. When resting on a porous sub-soil, clay loams do not require draining. In other cases it is only necessary to remove the superabundant moisture in order to have a soil in every way fitted for the wants of plants. Such soils turn up as a fine mould, into which the atmosphere has ready access, and the roots can throw out without impediment. Clay loams should be looked upon as the standard to which, by energy and capital, we are to bring the stiffer beds; and though in the absence of sand it is vain to hope for the permeable and mouldy character, yet it is astonishing what alterations the strongest soils are capable of under judicious management. The addition of sand to clay would be very beneficial, but the great quantity required to make any alteration unfortunately prevents this being carried out.

Silicious or Sandy Soils.

This term is applied by the generality of people to all soils principally composed of silicious matter, either in the form of fine sand or of coarser sand and gravel. They possess qualities the very opposite of the last class, being light in colour, varying from a white silver sand to a rich red, and exceedingly porous. In reality heavier than clays, they appear light from the absence of all cohesiveness. They neither attract gaseous matters from the atmosphere nor retain the manures put into them; hence the poorer and purer descriptions are known as hungry soils, and are barren and unprofitable to cultivate. Not retaining moisture and being so permeable, these soils are warm; the heat, too often rendered latent by evaporation in a wet soil, is enabled to penetrate and warm every portion, rendering them peculiarly suitable for rapid germination; the seed never lies long in the ground, provided there is sufficient moisture. I have known Swedes, drilled with a solution of super-phosphate, appear above ground in three days, and commonly in a week; whereas on cold soils it is usually a fortnight before they can be seen. Harvests are much forwarder for the same reason; there is often the difference of from ten days to a fortnight between sandy and clayey soils—a very important fact in our variable climate. As these soils do not retain moisture, and possess only slight capillary powers, they are subject

to burn up with long-continued drought, and hence are very uncertain in their produce. In dry seasons the spring Corn is often a miserable failure, the straw about a foot long, and the yield little more than the seed sown. The root crop for the same reason can seldom be depended upon. In a moist climate, by the aid of stimulating manures, a crop is pretty certain, but in other cases vegetation is often prematurely arrested and mildew attacks the leaves, preventing further growth. Very nice management is required, exactly the reverse of that necessary for the clays; in cultivating the latter, our object is to loosen and render it as friable as possible, for which purpose we plough repeatedly, dress with long half-rotted manure, and burn the surface into ashes. On sands we plough but little, and sow the seed immediately after the plough, so as to receive the benefit of the moisture which is brought to the surface, repeatedly roll and consolidate by every means in our power, until we so force the particles together as to enable the soil to retain the moisture better. The poorer kinds of sands, those that contain from 80 to 90 per cent. of silica, are nearly as undesirable as the very poor clays. In cases, however, where it is practicable, great advantages have followed the application of marl, clay, or chalk; this has been largely carried out in parts of Norfolk, the clay and marl being even brought from considerable distances; small quantities, comparatively speaking, are found when acted upon by frost and air to affect an alteration in the soil; the dose, however, should not be niggardly, at least 70 to 100 yards per acre, laid on the surface as early in the winter as possible, and not ploughed in until all chances of frost are over. By such means we may in time produce a sandy loam of considerable value. Natural sandy loams are often found occupying the valleys in sandy districts; they consist of a large amount of sand with a small, but sufficient, quantity of clay, and often lime, to remedy all those defects so apparent in the purer sands; and hence such soils are amongst the most valuable known, being adapted to the growth of almost every crop. Never wet, unless resting on a retentive sub-soil, they yet retain sufficient moisture to keep the roots moist; not porous like sand, they are still sufficiently open to allow of the air circulating through and warming them; easy of cultivation, they are ploughed with two horses. The clay protects from drought; the sand causes a high temperature. In some cases the sand is replaced by coarse gravel, a large quantity of iron being present; such soils, where the proportion of clay is large, are stubborn, and, if cultivated when moist, bind together and form masses very difficult to bring to pieces. Root crops grow well, though not equal to those on the sandy loams, and, if fed off on the ground, the latter is apt to become poached during wet weather, and the crop of Barley often suffers. On the whole we should give the preference to the sandy loams.

The principal sandy soils in this country exist in the following districts:—In the south-east, forming portions of the plastic clay, commonly very poor and often resting on clay, wet; seen in parts of Surrey, Middlesex, and Berkshire.—Soils of the Iron and Hastings sand beds, belonging to the Wealden formation; very various in quality; where sand and iron occur without clay they are poor; where the latter earth is present, of very fair quality.—The soils of the upper and lower greensand, occurring in Surrey, Hampshire, and the southern portions of the Isle of Wight. This series includes some of the richest, as well as poorest, soils in England. The former are found resting on the upper beds, and occur at Farnham, Selbourn, and the Isle of Wight. The powers of such soils are most extraordinary, due probably to a proper admixture of sand, clay, and lime, and the presence of soluble silicates—that is, silica united with certain alkalies in such proportions as are slowly rendered soluble by the action of rain-water. These soils are peculiarly adapted to the growth of Wheat and Hops, and produce bulky root crops. The soils of the lower greensand are the very reverse, generally consisting of fine sand, iron, traces of the alkalies, and scarcely any clay; they are light and very poor, in many districts unfit for cultivation. Large tracts are seen covered with Gorse and Heather; when a little better they are frequently planted with Larch and Scotch Fir for Hop-poles. Occasionally in the valleys a better soil is found, but even there it is weak, producing wretched pasture and very uncertain crops.—The lower greensand is seen in some parts of Surrey, especially the northern division, where it joins the Weald clay, forming a considerable range of hills, of which Leith is the highest point.—We pass on to the soils of the old and new red sandstone developed in the southern and western counties. Taken as a class they form deep rich soils, and, when clay is present in considerable quantities, the finest Oak timber land we have. The above, with a few smaller districts situated on the Silurian and primary rocks, form the principal sandy soils found in this country, exclusive of those formed by alluvial and drift deposit. As before stated, they present great variety of colour, texture, and physical properties, and consequently every grade of fertility from pure sand, which is perfectly

barren, to the richest sandy loams. As a class, they may be termed free-working, porous, warm, dry, and quick soils; but too frequently destitute or deficient in those important substances which are necessary to ensure the maturity of a crop. The very poorest are capable of great improvement by the addition of clay and lime; though, when the sand is coarse-grained, it is to be feared that these substances would in time pass away, and be lost in the sub-soil.

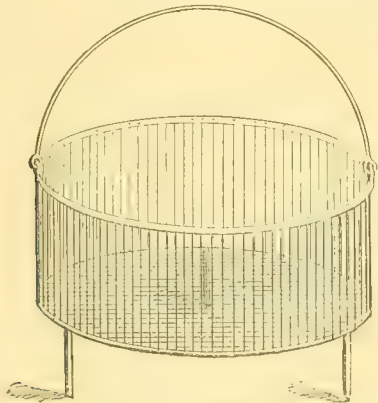
Calcareous Soils.

This term is applied to those soils in which carbonate of lime predominates, either in a fine state of division, as in chalk soils, or as calcareous gravel, or even large irregular fragments. With few exceptions, all true calcareous soils are free from excess of moisture light in colour, porous, and resting upon an open sub-soil, derived from disintegration of a hard rock or compact chalk; often only a few inches in depth, they are liable to burn up in hot dry weather. Sub-soil ploughing, by gradually deepening the surface, is very beneficial, and should not be neglected. Where a certain quantity of clay is present the soil is termed a marl, and becomes of improved quality, capable of carrying heavy crops of Wheat and Beans. On the thinner lands, Barley and root crops answer well, provided the surface is kept sufficiently firm by sheep treading and rolling. Limestone soils possess very little cohesive attraction, and though good absorbents, are bad retainers of water. As in the case of certain sandy soils, too frequent ploughing, especially for the root crop, is very injurious; and I have seen an instance where the produce was reduced at least one-half from an extra ploughing. Calcareous soils, taken as a whole, are of a useful nature, adapted to a mixed husbandry, producing a sweet short Grass suitable for sheep, and growing most crops, especially all those of a leguminous character. The root crop requires nice management, and is rather uncertain; still with judicious treatment and the application of artificial manures it need seldom fail. The soils of the chalk formation, found principally in the south and eastern counties of England, form perhaps the most considerable and collected examples of calcareous nature. They are divided into two sorts, according as they are derived from the upper or lower beds; the former are usually poor, light, and full of flints; the latter possess more tenacity, are even marly towards the lower parts, contain no flints, and form very fertile soils. Various theories have been started to explain this difference; doubtless, to a considerable extent, it may be traced to the proportion of clay present, but also to the existence of alkalies and silica in a comminuted form, either combined as soluble silicates or existing separately in such a state as to become slowly soluble under the action of rain water. It has been calculated from analysis that about the same per-centage of silica is diffused through the lower chalk as is found collected together as flints in the upper. To whatever due, the fertility of the lower chalk is so marked that in many instances it has been even brought from long distances at considerable expense and applied as a dressing to the soils of the upper beds. The soils upon the oolite formation form the other principal example of calcareous origin; they occur in narrow patches, from Somersetshire through the central part of England, up to Yorkshire, generally forming elevated land. Resting on a porous sub-soil, they seldom require drainage. The depth varies according to the situation, whether on the hills or in the valleys, and the particular bed from whence derived; generally speaking shallow, but often resting on a brashy sub-soil, capable of improvement by sub-soiling. In the valleys occur useful soils, producing good cereal and leguminous crops; but on the hills the soil is thin, porous, and poor, requiring different management. Seed crops must be occasional only, and the land is usually rested with Sainfoin, which remains down several years, and, being a leguminous fodder-crop, seems specially adapted for calcareous soils. Owing, however, to the variety of beds which occur in close proximity, and often come to the surface on the same farm, the nature of the land varies on the most limited areas,—a circumstance of great value to the cultivator, who can adopt his cropping to the peculiarities of each field, and thus increase the productiveness of his land. Occasional draining may become necessary from the presence of a vein of clay between two porous beds; but this is generally a simple operation, as we can often empty the drain into the porous rock, without any fear of the waters reappearing. There are other considerable limestone soils, such as the mountain limestone, and many smaller tracts scattered over all parts of the country. The presence of a small proportion of lime is indispensable to every fertile soil, and as the quantity required is small, it forms a most important application to all soils that are deficient in this respect; it is used either as a carbonate in the form of chalk, limestone, &c., or in the caustic state, as quick lime. The operation of lime under the latter form will be best discussed when describing the chemical peculiarities of soils.

(To be continued.)

A GOOD FUMIGATOR.

MOST of the patent and other fumigators purchased by horticulturists seem to share one common fate. After the first few trials they are generally consigned to a dusty shelf in the tool-house or potting-shed, and we gladly use an old cinder-riddle or even a perforated flower-pot instead. I look on a complicated fumigator as perfectly useless, where large houses have to be smoked in as short a time as possible. They may amuse an amateur, but professional gardeners, in general, despise them; an old riddle answers much better, but the accompanying figure will give an excellent idea of a fumigator not often met with, although one of the very best contrivances extant. It is made of wrought iron, and of any size, from 1 to 3 feet in diameter. When the tobacco, or, better still, tobacco-rag, is once lighted it burns quite freely without any blowing, and gives off a dense volume of smoke in a remarkably short time. It is easily set at work by placing a few glowing embers from the stove-hole fire on the bottom and sprinkling damp tobacco or "rag" over them; when fairly alight the fumes may be cooled by spreading a damp sheet of either coarse tiffany or hexagon netting over the handle, letting it fall loosely around the sides. This last precaution is worth adopting in the case of Ferns, when throwing up their young fronds, or for *Odontoglossums* and *Masdevallias*, both being injured by hot smoke. A word on "tobacco-rag" may not be out of place. This material is produced in considerable quantities by the tobacco-manufacturers of Manchester, Liverpool, and other large towns, and is both cheaper and better than any other material used for fumigating, if we except the pure bonded



A good and simple Fumigator.

tobacco used at Kew and other government places. Tobacco papers are, as a rule, bad, as they burn too quickly and scorch everything near them. The tenderest exotics will bear the densest cloud of tobacco-smoke imaginable, providing it is cool. It is the heat from combustion, not the narcotic, that injures them, causing the leaves to curl like paper, owing to excessive evaporation. Tobacco-water is well known to be a fertiliser, and plants look fresher and greener after fumigation, if the smoke has not been too hot. We have had practical experience of the above, as a simple and effective fumigator, and can thoroughly recommend it. B.

A Gardener's Barometer.—The common camphor-bottle makes a very cloudy index of atmospheric weight and weather changes, on which the following is a beautiful improvement. Dissolve $2\frac{1}{2}$ drachms of camphor in 11 fluid drachms of alcohol. Put 38 grains of nitrate of potash (saltpetre), and 38 grains of muriate of ammonia (sal ammoniac) into 9 fluid drachms of water; when all are perfectly dissolved, mix the two solutions. Shake them well in a 2-ounce or 4-ounce white glass vial, cork very loosely, or better, tie over the orifice a piece of linen or cotton cloth, and place the instrument in a good light out of the sunshine, where it can be observed without handling. When the weather is fine and clear, the fluid is also; but on the least change, the chemicals which lie as a sediment, rise in beautiful frond-like crystals proportionately, and again duly subside. By watching these changes one soon becomes able to predict the changes of weather probable for a few hours to come, in any locality, but not for all alike. This instrument may be recommended also as a pretty philosophical toy with a problem annexed.—*Cultivator*.

THE HOUSEHOLD.

VEGETABLE COOKERY.*

BEFORE these really excellent works came into our hands, we were quite unaware of the great number and variety of wholesome and palatable dishes, which, with very little trouble, can be prepared from fruit and vegetables alone, excluding animal ingredients in every shape, except milk, cream, butter, eggs, and cheese. We find in each volume several hundred receipts which appear to us capable of gratifying the tastes, not only of Vegetarians proper, but also of those who adhere to the principles and practice of a mixed dietary. The merits of the two manuals appear to us so evenly balanced that any comparison between them would be almost invidious. From the cheaper, but not inferior, volume ("Vegetable Cookery"), however, we are tempted to extract the following chapter.

Vegetable Soups.

442. The principal intention in the formation of soups is to extract, suspend, and combine in a liquid medium, the nutritive principles and flavours of the various articles employed; and thus produce in a fluid or semi-fluid state, a stimulating, nutritious, and palatable compound. Soup, however, is insufficient to maintain health and strength without bread or other solid aliment, and being less digestible than, the latter, it should always be taken in moderation.

443. *Utensils*: The cover of the soup-pan, or *pot-au-feu*, should fit closely; stew-pans and saucepans should be filled with water after the soup, sauce, &c., have been removed, and these, as well as other vessels employed, should be kept very clean and dry. As soups will ferment without the greatest attention, they should be warmed up every day, or every other day in cool weather, put into fresh scalded tureens, and kept in a cool place.

444. *Ingredients*: The first requisite is pure, soft, or distilled water; hard water, however, is said to be preferable for green-Pea soups, as the colour of the Peas is better preserved in it.

Nearly all sorts of grain, roots, and vegetables may be used in making soups; some for the purpose of supplying nutritive matter, others for imparting flavour, &c.: and the art of composing a good, rich, palatable soup consists in judiciously proportioning the several ingredients, taking care that the flavour of no one article overpowers that of the rest. The principal articles employed are:—(1.) *Grain*, &c.: Scotch Barley, pearl Barley, Groats, Rice, Peas, Beans, Lentils, whole or ground; also Arrowroot, *tous-les-mois*, Potato flour, Sago, Macaroni, Vermicelli, Semolina, Cagliari paste.—(2.) *Roots*, &c.: Potatoes, Carrots, Parsnips, Turnips, Beet, Jerusalem Artichokes, Horseradish, and one or two fruits, as Cucumbers, Vegetable Marrows, Tomatoes, &c.—(3.) *Buds and Young Shoots*: Onions, Shallots, Garlic, Leeks, Asparagus, &c.—(4.) *Leaves, Leaf-stalks, and Bracts*: Cabbages, Cauliflowers, Lettuces, Celery and its seeds, Bay Leaves.—(5.) *Herbs*: Parsley, common Thyme, Lemon Thyme, Orange Thyme, Knotted Marjoram, Sage, Mint, Winter Savory, Sweet Basil, Tarragon, Chervil, Burnet, &c. The latter has the flavour of Cucumber.—(6.) *Flowerless Plants*: Mushrooms, Morels, &c.—(7.) *Seasonings*, &c.: Salt, sugar, pepper, mustard, cayenne, Pimento (allspice), Cinnamon, Ginger, Nutmeg, Cloves, Mace, Lemon-peel and juice, ketchup, &c.—(8.) *Animal Products*: Milk, cream, butter, eggs, and cheese.

To Prepare Ingredients for Vegetable Soups.

445. Everything intended for soup should be fresh and good, and should be prepared with the greatest nicety, and with the utmost attention to cleanliness. Barley, Rice, Sago, Tapioca, Macaroni, and Vermicelli should be well washed and soaked in cold water, and then boiled in the soup. Sago and Tapioca should be boiled about half an hour, and strained previously to being added to the soup. About 1 ounce to each pint of water. These form a good stock to be added to each quart of soup. Grain previously boiled or creed should not be added till fifteen or twenty minutes before the soup is ready. Peas, Lentils, and Haricot Beans should be soaked for twelve hours, or more, in cold water before they are used, and as the former differ much in quality, such only should be employed as will become soft by boiling. Count Rumford says, that Peas should never be suffered to remain in the water over-night, as he found by repeated trials that they never boil soft if the water in which they are boiled is not boiling hot when they are put into it. Potatoes, Turnips, and Jerusalem Artichokes should be washed, pared, and cut into small portions; Parsnips, Carrots, &c., washed, scraped, and cut; white roots should be put into cold water as they are cut, to prevent them being discoloured by the air; Onions, Shallots, and Garlic should be cut small, and used with great moderation. Sliced Onions, fried in butter, with a little

* "Vegetable Cookery." By John Smith, author of "Fruits and Farinacea." London: Frederick Pitman, Paternoster Row.

"Vegetarian Cookery." By a Lady. Sixth Edition. London: F. Pitman Paternoster Row.

flour, sugar, salt, and pepper, till they are browned, and then rubbed through a sieve, are useful to heighten the colour and flavour of brown soups and sauces. Onions freed from their outer skin, dried gradually to a deep brown in a very moderately heated oven, and flattened like Norfolk biffins, will keep for almost any length of time, and are very useful for the same purpose. Onions, Shallots, or even a little Garlic may be introduced in the most delicate dishes, if only so well blended with other flavours as not to be objectionable. A small piece of Garlic crushed with a knife and stirred in is sufficient. It is useless to put several ingredients of the same character into either soups or sauces, as Cloves and Allspice, Mace and Nutmegs, Marjoram, Thyme, and savoury, &c.; soups are also more wholesome when not complicated by too great a variety of grain, roots, &c.

446. As butter loses its sweetness by boiling, it should be added after the soup has been sufficiently cooked, except when the vegetables are stewed in the butter. Neither eggs nor cream should be added to soups or sauces till all the other ingredients have been well boiled, and the whole of a proper thickness; and, after they have been added, the soup should be removed from the fire, carefully shaken or stirred in one direction till ready, but not allowed to boil again.

447. *Thickening*.—Fine fresh Rice flour, which has been passed through a lawn sieve, is best for thickening soups generally, but Arrowroot is preferable for white soups. *Tous-les-mois*, Potato flour, or roux, may also be employed for the same purpose; from one to two ounces for a quart of soup. The flour, &c., used for thickening, should be thoroughly blended with sugar, salt, pounded spices, ketchup, &c. Add to it, very gradually, sufficient cold liquid to render it of the consistence of batter; when quite smooth, stir it into the boiling soup, which should be simmered and stirred for ten minutes afterwards. Good bran tea, boiled with the vegetables, is useful for thickening.

448. *Seasoning*.—Sauces, being intended to give a relish to things otherwise insipid, admit of being more highly seasoned than soups, which should always be mild, and not too strongly flavoured. About an ounce or an ounce and a half of sugar to each gallon of soup is an improvement; the same proportion of salt may be used when few vegetables are employed, and two ounces when a large quantity of them is used. It is always safer to use too little than too much salt, pepper, and other seasonings, as a deficiency can be easily remedied, but an excess cannot be removed; yet, as heat develops the flavour of pepper and most spices, it is advisable to put in the proper quantity at first; frequently tasting is, however, the only sure guide. Half a drachm of Celery or Cress seed finely powdered, or double the quantity if used whole, will impart almost as much flavour to two quarts of soup as two or three heads of the fresh vegetable. Herb powder, or vegetable relish, browning, ketchup, flavoured vinegars, sweet herbs, and savoury spice, are very convenient auxiliaries with which to finish soups. Spices and flavouring should not be added to soup till ten or fifteen minutes before it is removed from the fire, as heat dissipates the aroma. Tomatoes are a great improvement to many kinds of soups. A bunch of herbs, when spoken of for soups, consists of Parsley, Thyme, and green Onions; when called seasoning, it is these with about three Bay leaves, six Cloves, a blade or two of Mace, common pepper and salt. Thickened soups require nearly twice as much seasoning as clear soups, the piquancy of spice being blunted by the flour and butter.

449. *Colouring*.—A piece of bread well-toasted, but not burnt, put into the soup a short time before it is ready, will generally be sufficient. An ounce or two of moist sugar, the coarser the better, may be put into a small saucepan with a piece of butter the size of a walnut, and dissolved together; add a glass of ketchup, and stir it well. Fried or baked Onions may be used for the same purpose, without either butter or ketchup. Also either brown or white roux, according to the colour of the soup.

General Directions for Making Broths for Clear Soups or Foundations for Thickened Soups.

450. These should be prepared the evening before they are wanted. *Method 1*.—Put the prepared vegetables and the cold soft water into a stewing jar or *pot-au-feu*; cover it closely, and place it in a very moderately heated oven; or, put the whole in a stew-pan, and raise the temperature gradually to the boiling point (say in thirty minutes); * skim the soup well, especially when it first begins to boil, or it cannot be rendered clear afterwards; a little salt thrown in will assist to bring the scum to the surface. As soon as the scum has been removed, put on the cover; keep the soup simmering gently but unceasingly, till all the ingredients which are soluble are quite tender or pulpy, which may require from one to six hours. When the vegetables are tough or fibrous, add a little soda to the water, especially if it be

hard. If intended as a foundation for thickened soup, pass the whole of the pulp, while hot, first through a colander, then through a fine sieve, add the thickening, seasoning, &c., and let the whole simmer ten minutes; but, if intended to be used as a broth for clear soup, let it stand ten minutes after it has been removed from the fire; then, without disturbing the sediment, pour the clear fluid into a basin, and after it has stood two hours, or when it is as transparent as it is likely to become, pour the clear fluid into a stew-pan. Unless skimmed and carefully managed, it may require the addition of two or three whites of eggs beaten up and boiled in the soup, to make it clear. If two kinds of soups are required, a portion may be poured off for clear soup, and the remainder boiled a little longer for thickened soup.

451. *Method 2*.—Dissolve the butter in a stew-pan, add a teaspoonful of brown sugar, then the sliced vegetables; cover them closely, and stew them very slowly till soft and slightly browned, which may require from twenty-five to sixty minutes. Add the boiling water, bread, boiled Peas, &c.; let the whole simmer, and skim it well; then add the seasoning, cover the pan closely, and continue the simmering gently for an hour and a half. Strain or decant, as in No. 1. When dried Peas, Lentils, Barley, Rice, or other grain are to be added, they should be previously well washed, soaked, and boiled, and put to the stewed vegetables with the boiling water. Barley requires long boiling. Sago and Tapioca should be washed and soaked for two or three hours; dissolve them in a little water, and add them with the water to the fried vegetables; stir the whole well till ready.

452. *Method 3*.—Fry the sliced vegetables in the butter fifteen minutes, or till lightly browned on all sides. Put them into a soup-pan with the boiling water and seasoning, and allow them to simmer till tender, taking care to skim well. Strain or decant, as in No. 1.

Ingredients for Vegetable Broths.

453. To be prepared by any one of the above methods. (a.) Turnips, Carrots, Onions, and other vegetables and seasoning herbs. (b.) Carrots four, Turnips two, Celery two heads, Onions four, toasted bread one slice, water four quarts. Stew or strain, or fry as above directed. (c.) Turnip one, Carrot one, Celery one head, Onions four ounces, butter three ounces, Peas one pint, a crust of bread, twenty-four berries of allspice, the same of black pepper, and two blades of Mace. Herbs tied in a bag may be boiled in the broth when preferred. (d.) Carrot one, Celery one head, Onions four, butter eight ounces. (e.) Potatoes six, Onions six, Carrots six, Turnips four, Celery three heads, butter four ounces, water four quarts, a brown toast, pepper and salt. (f.) *Barley Broth*.—Scotch Barley four ounces, sliced Onions four ounces, salt two ounces, water five quarts. Wash and steep the Barley, boil the whole an hour and a quarter. (g.) *Scotch Broth*.—Scotch or pearl Barley four ounces, groats two ounces, Turnips two, Carrots two, butter two ounces, bread crust eight ounces, water four quarts. Wash and steep the Barley, boil it two hours, add the Turnips and Carrots, cut small, and when these are tender, add pot-herbs, seasoning, &c.

Vegetable Stock.

454. Stock is a term employed to denote that part of soup which becomes gelatinous when cold. For vegetable soups it is prepared from Sago, Tapioca, Arrowroot, Salep, and Irish Moss. These substances should be well washed, and soaked two or three hours separately, and then dissolved by boiling them in water. One ounce of any one of these, or of a combination of them, may be dissolved in a pint of water, except in the case of Salep, one ounce of which will require nearly four pints of water. Soups may be divided into—1. Clear soups. 2. Opaque or thickened soups.

(1.) Clear Vegetable Soups.

455. Make a good clear broth by any one of the methods 450, 451, 452, then add a clear stock, or cut vegetables, Macaroni, &c., which have been partially cooked. A little fried Parsley is frequently put into clear soups before serving them. 1. Cut the vegetables into shreds or into small dice. Then put them into cold water, boil them five minutes, and drain them on a sieve. Add to them two quarts of clear soup (453 b); simmer the whole gently till the vegetables are tender, which may be the case in thirty or forty minutes. Season with salt and cayenne; four table-spoonfuls of Mushroom ketchup may likewise be added. 2. Having cut the vegetables, wash them in cold water, then drain them in a sieve; when dry, put them in a stew-pan, with two ounces of butter and a tea-spoonful of powdered sugar; set the pan on a very sharp fire for ten minutes, shaking the contents over occasionally till they are covered with a thin bright glaze, but take care that they are neither browned nor surrounded with a whitish liquid. Pour two quarts of clear broth over them, raise the soup to a boiling heat, and let it simmer till the vegetables are quite tender, especially the Onions, which may require half an hour. Skim the soup well, and try whether it has been properly seasoned. There should be about half a pound of vegetables to two quarts of broth.

456. Additions to broths in order to form clear soups:—(a.) One

* By this means the albumen, fibrine, caseine, &c., of the vegetables will be obtained in solution; but if the temperature be raised too rapidly, the fibres of the vegetables will be hardened, and the albumen coagulated. Rapid boiling carries off the volatile parts by evaporation.

large Turnip, the red part of a large Carrot, Onions, three ounces, Celery one stick. (b.) Carrots, Turnips, or Turnip Radishes; Onions three, Celery one head. (c.) Carrots and Turnips, six ounces; Onions, Leeks, and Celery, three ounces. Proceed according to 455 2, using butter two ounces, sugar one tea-spoonful, broth three pints. A few green Peas, small pieces of Broccoli, Cauliflower, or Brussels Sprouts, previously boiled, may be added. A little Tarragon and Chervil, or the vinegars flavoured with these herbs, are a pleasant addition to this and other soups. (d.) One Carrot, one Turnip, eighteen button Onions. (e.) Turnips, or Carrots, or Jerusalem Artichokes eight ounces. Artichokes will require only half as much boiling as either of the other vegetables. (f.) Maccaroni washed, steeped, cut in thin pieces, and partially cooked or broken into the broth, four ounces to three pints. Boil till tender. Vermicelli requires only half the time of boiling which is necessary for Maccaroni. (g.) Sago half an ounce, Tapioca one ounce, boiled half an hour in two pints of water. Add this stock to broth, simmer and skim well; strain the soup two or three times through book muslin, or a fine sieve; after the second straining, add two ounces of butter, two table-spoonfuls of ketchup, and one of Lemon pickle or Lemon juice, or pickled Mushrooms, a little cayenne and salt, and one table-spoonful of browning; skim and simmer till clear. The addition of forcemeat balls, or egg balls, &c., will render it an excellent substitute for mock-turtle soup. Herbs tied in a muslin bag may be boiled in the soup when preferred. (h.) Green Peas boiled till rather tender, and added to clear broth. (i.) Mash well two ounces of Rice, and boil it in three pints of broth till tender. (j.) Drop very lightly and by degrees six ounces of Semolina or Vermicelli into three quarts of boiling soup, which should be stirred all the time. Skim, and simmer ten or fifteen minutes. The same quantity of Vermicelli should be simmered for half an hour, or put four ounces of it in cold water, wash, steep, drain it quite dry, then stew it in the soup from ten to fifteen minutes. (k.) To five pints of clear stock (455 or 456 g) add, when it boils, a pound and a half of good baking Apples, and stew them to a smooth pulp; press the whole through a strainer, add a small tea-spoonful of powdered ginger and a little pepper, and let the soup simmer two or three minutes; skim, and serve it hot with a dish of boiled Rice, the grains separate and dry.

Thickening Vegetable Soups.

457. These may be either *purée* or smooth soups, or entire unstrained soups; and as to colour they may be either brown, green, or white, according to the ingredients used.

(a.) Brown Vegetable Soups.

Proceed to make them by the general directions, 450, &c. (a.) Potatoes four to six, Onions four to six, Carrots four to six, Turnips four to six, Celery three heads, butter eight ounces, a brown toast, boiling water four quarts. Fry the vegetables as in 452; then the toast and a head of Celery cut small; add salt and pepper, stew the whole four hours, and strain. (b.) Dried Peas one pint and a half, Turnips one pound, Carrots one pound, Celery eight ounces, Onions six ounces, butter four ounces, salt quarter of an ounce, toasted bread eight ounces, pepper half a tea-spoonful, and two table-spoonfuls of ketchup. Stew as in 451; add boiling water to make three quarts altogether, strain, and then simmer for a few minutes. (c.) Split Peas a pint and a half, pearl Barley half a pint, Carrots two, Onion one, Turnips two, Celery one head, toasted bread eight ounces, water four quarts. Wash and steep the Peas and Barley, boil them with a little salt and soda, add the vegetables and bread, and when quite soft pulp the whole through a colander. Add gradually a quart of boiling water, return the soup to the pan, season with salt and pepper, and boil ten minutes. (d.) Large green Peas one quart, butter two or three ounces, one middle-sized Onion, a little Mint, salt two tea-spoonfuls, sugar one tea-spoonful, pepper half a tea-spoonful, water half a pint. Put the whole in a pan, and set it on a slow fire, stir it occasionally until no more moisture remains at the bottom of the pan; add three table-spoonfuls of flour; stir the mixture rapidly, and break the Peas against the side of the pan with a wooden spoon; moisten with a quart of milk and a quart of water; simmer twenty minutes, or longer if the Peas are old, then serve. Fried bread in small dice is a good accompaniment. The bread should not be boiled, but the soup poured upon it. Vegetable broth may be used instead of the milk and water. The Peas may be passed through a hair-sieve, by breaking and pressing them with the back of a spoon, by which means a *purée* soup is produced. Heat it, and serve. (e.) Cabbage Lettuces four, Cos Lettuce one, Sorrel one handful, Tarragon and Chervil a little of each, Cucumbers two or three small ones. Wash, dry, and cut the Lettuces, pare and slice the Cucumbers; butter four ounces. Stir the whole over a slow fire till no liquid remains; add two table-spoonfuls of flour, mix well, and then add gradually two quarts of broth (453 a), or water only, and boil; when boiling add a pint of green Peas, two tea-spoonfuls of sugar, and a little salt and pepper; when the Peas are tender, serve. (f.) Turnips three, cut in

quarters; Carrots three, cut small; Jerusalem Artichokes four, Celery one head, Onions three, Sago one tea-cupful, Barley half a tea-cupful, Rice half a tea-cupful, Peas two tea-cupfuls, Arrowroot or Potato starch one tea-cupful, water five quarts. Boil the vegetables, Peas, and Barley to a pulp; strain, then add the Rice, Sago, Potato flour, a bunch of herbs, pepper, and salt; boil half an hour, take out the herbs, then thicken with three table-spoonfuls of flour, and four ounces of butter worked well together. Add two table-spoonfuls of ketchup, two table-spoonfuls of Lemon pickle, then boil the whole ten minutes. (g.) *Crecy Soup*.—Red part of twelve Carrots, one half of them rasped, the other half cut small; Turnips two, Celery two heads, Onions two, one Leek, butter four ounces, sugar one table-spoonful. Stew the cut vegetables with the butter and sugar, as in 451. To these add two quarts of boiling water or of broth (453 a), and before the soup is removed from the fire, add two table-spoonfuls of Lemon pickle, or the juice of a Lemon. (h.) Carrots or Parsnips two pounds, Celery two heads, butter three ounces, red part of Carrots six ounces, water four pints and a half, or substitute three ounces of Rice or Barley for one-half of the Carrots. Proceed as in 451. (i.) Jerusalem Artichokes or Vegetable Marrow two pounds, Turnips one pound, Onions two or three, Celery one head, water two quarts, flour two table-spoonfuls, butter one ounce, pepper and salt. Boil or stew the vegetables till tender; add the flour and seasoning; let the soup simmer half an hour, and stir it frequently. (j.) Carrots in very thin slices two pounds, Onions sliced two, Cloves two, a little Thyme, sugar and salt two tea-spoonfuls of each, and a quarter of a tea-spoonful of pepper, water half a pint. Let the whole simmer gently for forty minutes; add three table-spoonfuls of flour, previously mixed with a little butter; then add two quarts of broth (453 a); pass the whole through a sieve, and, when the soup has been again heated, serve it. (k.) Cucumbers five or six of a moderate size, Cos Lettuces six, bread crumbs six ounces, Onions four ounces, Parsley one ounce, butter four ounces. Pare and slice the Cucumbers and Onions; dress and cut the Lettuces; add the Parsley with a little seasoning; put the vegetables in a pan with the butter, and stew them gently for three-quarters of an hour; then pour in two quarts of boiling water, add the bread crumbs, and let the soup simmer gently for two hours. If too thin, mix a tea-spoonful of flour with an ounce of butter, stir it well in, boil ten minutes longer, and add a table-spoonful of Tarragon vinegar. (l.) Cabbage Lettuces two, Spinach a handful, Carrots six, Turnips six, Onions three or four, Parsley one ounce, water two quarts. Wash and chop the vegetables small; cut the Carrots, Turnips, and Onions in small pieces; stew them in four ounces of butter; add the boiling water, and boil the soup gently, with a little seasoning, for two hours. A pint of young Peas may be added, or grey Peas which have been soaked and boiled; then stew another hour. (m.) Count Rumford's proportions are, Pearl Barley four ounces, Peas four ounces, Potatoes twelve ounces, bread four ounces, salt one ounce, vinegar three ounces, water two quarts. Boil the Pearl Barley, then add the Peas, and continue the boiling for two hours; add the Potatoes peeled, or first boiled to remove the peel, boil one hour, and stir well. Add the vinegar and salt, and, just before serving, pour the soup over the bread. The bread should be cut as fine or thin as possible, and if dry and hard so much the better. The soup may be improved by using various kinds of roots, vegetables, and fine herbs. (n.) Carrots, Turnips, and Onions two of each, one Leek and one head of Celery. Cutting them thin and slanting; fry the Onions till rather brown in four ounces of butter, add the other vegetables, and fry them ten minutes longer; then add seven quarts of water, boil up, and add split Peas one pound and a half; simmer two or three hours, or until the whole has been reduced to a pulp; add two table-spoonfuls of salt, two of sugar, and one of dried Mint; mix eight ounces of flour quite smooth with a pint of water, stir it well, pour in the soup, and boil half an hour. (o.) One Turnip, one Carrot, three or four Jerusalem Artichokes, six middle-sized Onions, two heads of Celery, one Leek. All the vegetables together should weigh about two pounds; butter four ounces, water one quart. Fry about one-half of the vegetables with a portion of the butter; cut the remaining half of the vegetables into small portions, and put them along with the fried vegetables into the water: raise the temperature to the boiling point, then let the whole simmer two hours, adding fresh boiling water as evaporation proceeds, so as to have about a quart of soup when the process is finished. Strain the soup, using a little pressure; if not thick enough, add a little flour and a little cream, if at hand; also a little pepper and salt, a tea-spoonful of sweet Marjoram, three table-spoonfuls of ketchup, and the remaining butter; let the whole simmer a few minutes. The soup is generally much esteemed. The introductory remarks on thickening, flavouring, and colouring, should be well attended to, in order to succeed satisfactorily in making the foregoing soups, and in order to vary them as may be

thought desirable. Water should be at a boiling heat when added to soup.

(b.) Green Vegetable Soups.

458. (a.) Boil three pints of fully grown but sound green Peas, with half a tea-spoonful of soda, for thirty minutes or more. When they are tender, drain them, and add them to two quarts of boiling stock (454), pale but good; stew them in it for half an hour, then pass the whole through a fine sieve; put the soup into a clean pan, and bring it to the boiling point, adding salt, if necessary, and a small tea-spoonful of powdered sugar. Clear off the scum, and serve. (b.) To the broth and stock (456 g) without the browning, add a pint of green Peas, previously boiled with a little soda and a sprig of Mint, and pulped through a sieve. Reserve a few to be put in whole, and if the soup be not of a sufficient consistency, thicken it with a little flour, butter, and cream. Spinach greening (373) is sometimes added. (c.) Green Peas one quart, Lettuces two, Onions three, bread eight ounces, Pea-shells without the stalks two quarts, Turnips three, Spinach or Parsley one handful, salt one table-spoonful, water five quarts. Proceed as at 450, pass the stewed vegetables through a colander or sieve, return the soup to the pan with a quart of boiling water; season with pepper and salt, and boil the soup about ten minutes. (d.) Cucumbers three or four pared and sliced, the hearts of three or four Lettuces shred small, two Onions cut thin, a few sprigs of Parsley, and, if not objectionable, twelve or more leaves of Mint roughly chopped. Stew these for nearly an hour over a gentle fire, with three or four ounces of butter; add half a tea-spoonful of salt, and a little white pepper or cayenne. When partially cooked, drain them from the butter, put them to a stock made of a quart of fully grown green Peas boiled, drained, pounded, and then stewed in five pints of the liquor in which they were boiled. Simmer the soup till all the butter has been cleared off, then add half or three-quarters of a pint of young Peas boiled as for eating. (e.) Green Beans one quart, Spinach one handful, Parsley one ounce, butter two ounces, vegetable broth two quarts, a little flour, pepper, and salt. Boil the Beans, skin and bruise them; add the water or broth, butter, flour, and seasoning, and the vegetables boiled till soft. Stir the soup till it boils, and pass it through a sieve. (f.) Green Beans one quart, one leaf of garden Sorrel. Boil them in plenty of water, and pulp them through a sieve; put them in a stew-pan with sufficient of the water in which they have been boiled, add one ounce of butter, half a spoonful of salt, a quarter of a spoonful of sugar, a quarter of a tea-spoonful of pepper, a little Tarragon, and a quarter of the flower of a French Marigold. Boil the soup twenty minutes, and serve.

(c.) White and other Vegetable Soups.

459. (a.) Pumpkins or Vegetable Marrow two pounds, cut in large dice, butter three or four ounces, salt and sugar two tea-spoonfuls of each, pepper a quarter of a tea-spoonful, water half a pint. Stew gently for twenty minutes; when in pulp, add two table-spoonfuls of flour, and three pints of milk gradually, stirring the whole well during the mixing. An Onion sliced may be stewed with the Marrow. (b.) Almonds two ounces, new milk one pint and a half, cream half a pint, flour one table-spoonful, one Onion, one head of Celery, butter one ounce. Blanch and chop the Almonds small, boil them gently one hour, along with the Onion and the white part of the Celery, in one pint of milk; remove the Onion and Celery, mix the flour and butter together, add half pint of milk, a little cayenne, Mace, and salt; stir the soup over the fire till it has boiled a few minutes, add the cream, and as soon as the soup boils again, remove and serve it. (c.) Into any clear boiling soup (as 456 g), without browning, bread, or seasoning, drop Vermicelli, Maccaroni, or Rice previously steeped in cold water for two hours. Milk or cream may be added, if required as a white soup. (d.) Or, after soaking and boiling the Maccaroni till

tender, drain it, wash it in fresh water, lay it on a cloth, and cut it into short lengths, then add it to the strained soup; add also thickening and seasoning as may be required, and boil the whole ten minutes, then add the cream. Vermicelli may be treated in the same way without cutting it into lengths. (e.) Wash and pare quickly some fresh Artichokes, and to preserve their colour, throw each into spring water as soon as the skin is removed. Boil three pounds of them in water for ten minutes; remove them and slice them into three pints of boiling stock (454 or 456 g); stew them fifteen or twenty minutes, press them with the soup through a fine sieve, and put the whole into a clean saucepan with a pint and a half more of stock; add salt and cayenne; skim the soup well, and after it has simmered two or three minutes, stir to it a pint of rich boiling cream or milk. Serve immediately.

THE WATER SOLDIER.

THIS is one of those curious water-plants which are seldom seen except in the gardens of those who have collections of aquatics. It, however, frequently becomes naturalised in ponds and waters, into which it has been introduced from the

garden, and it is believed to be really wild in the fens of Eastern England, in Ireland, and in some parts of Lancashire and Cheshire. A pond in Messrs. Rollisson's Nursery, at Tooting, is full of it, the plants reminding one of small submerged Pine-apples. Our illustration shows both the plant and the flowers well, though it can scarcely be called an ornamental plant in the common sense of the word. Nevertheless, it possesses some interest for lovers of hardy water plants, and it is easily established in any piece of water, small or large. Its botanical name is *Stratiotes aloides*, the specific name being given from the resemblance of the plant to some Aloes. In the autumn the plants sink to the bottom of the water. In the spring, from among the leaves of the old plants, arise numerous thick suckers, which produce young plants. The flowers are like those of the Frog-bit, pure white with yellow



The Water Soldier.

stamens, and they appear late in summer. The leaves are sharply serrated, and from 6 to 18 inches long. W.

The first Dahlia.—This was introduced into England by Lady Holland, and is thus alluded to in "Holland House"—the recent work of the Princess Marie Lichtenstein:—"Having been much gratified somewhere in the South of Europe by her first acquaintance with Palestine soup, and, ascertaining that the main ingredient was the Jerusalem Artichoke, Lady Holland procured what she supposed to be a root of it, and forwarded it (probably by a King's Messenger) to her gardener at Holland House. When a beautiful flower came up instead of a succulent vegetable, she gazed on it with a feeling near akin to that of the fox-hunter, who complained that the smell of the Violets spoilt the scent. But the value of her acquisition began to break upon her when the London seedsmen, who came to look at it, offered thirty guineas for a root. Another version is, that a root was given to her at Valentia in 1804 by a celebrated botanist, who had just received it, an unknown rarity, from South America. At all events, there was ample justification for the graceful verses of her lord:—

The Dahlia you brought to our isle,
Your praises for ever shall speak,
In gardens as sweet as your smile,
And colours as bright as your cheek."

WORK FOR THE WEEK.

PRIVATE GARDENS.

The Flower Garden.—All flower-beds should now be cleared of their summer occupants, such as Pelargoniums, Calceolarias, and similar plants. Centaureas, especially *C. Clementii*, *Geranium anemonifolium*, and some Calceolarias, in very mild districts, and on sandy well-drained soils, might be wintered at the base of a wall; but, as a severe season would probably destroy them, a stock of them should also be stored in frames. The variegated *Chrysanthemum Sensation* will stand a hard winter with impunity in such a situation, and the roots may be lifted in spring and forced in heat for cuttings. It is a fine substitute in our summer and autumn flower gardens for yellow variegated-leaved Pelargoniums; and, as it is so hardy, it is a suitable plant for such as have little accommodation for tender plants, and fills at once such beds as are expected to be gay in spring. *Sedum californicum*, *tectorum*, and *montanum*, and Daisies make nice edgings; and Pansies, Violas, Alyssums, Candytufts, and the perennial Iberises, Nemophilas, Hepaticas, Stonecrop, *Myosotis*, *Polyanthuses*, Wallflowers, &c., make good material for massing or mixing. Bulbous plants, too, such as Snowdrops, Crocuses, Hyacinths, Tulips, Narcissi, and Scillas may be advantageously mixed with these flowers, or used in masses by themselves. Cut over decayed stalks of herbaceous plants; and, in order to compensate for the loss of the protection that would be afforded by their stalks, place some ashes, leaf-soil, or Cocoa-nut fibre around their crowns. Scarce Alpines and herbaceous plants, if in pots, had better be wintered in frames than left out of doors. Whatever alterations are to be made in the pattern of the flower-beds, size or course of the walks, lawns, rockeries, &c., should be done now if possible. Roll and sweep lawns, and keep all free from leaves and weeds.

Shrubberies.—Any alterations that may be needed in these should be done as speedily as possible, and the planting of both deciduous and evergreen trees and shrubs should be proceeded with. Pruning of the hardest deciduous plants may be performed at convenience; but the more tender sorts, together with evergreens, should be left untouched till spring. Prepare for protecting from hard frosts Magnolias, Pomegranates, Myrtles, Edwardsias, Bays, Moutan, Pæonies, and similar tender plants. Straw or bast mats, Fern, evergreen boughs, &c., may be effectively used for this purpose. If the plants are on walls, they are easily managed; but around isolated specimens on lawns, some strong stakes should be inserted to support the covering. A little protection, too, is sometimes required for tender Roses, such as a few twigs of Broom to cover the branches, which may be tied loosely together, and a mulching of litter around the base. In the nursery, young plants, if three or four years old, may be lifted and transplanted permanently, and younger ones should be shifted farther apart in the rows. The finer Conifers are perhaps best moved in early spring, but well-rooted layers of deciduous trees may now be separated and planted in rows. Cover over with hoops and mats Magnolias and Japanese Maples, layered out of doors if the weather is severe. Beds of seedling Rhododendrons, Kalmias, hardy Azaleas, &c., are generally covered over with some Birch or other brushwood, which is laid horizontally over them, supported about a foot high, by means of a framework of wood, to protect the young plants from the sun in summer and the frost in winter. Should this covering now be too thin, a little addition ought to be made to it. Cuttings of deciduous trees and shrubs may be inserted in lines in a border; the best of the prunings should be adopted for this purpose. Conifers which were grafted in August and September, and which have now taken well, should have their ligatures unfastened, and the plants should receive more light and air than they did for the first weeks after being grafted; indeed, they may be removed from close frames to an open shelf or bed in the propagating house to make room for cuttings that have callused outside, and which now require to be put into heat to make them root well; care, however, should be taken not to introduce such plants too soon into warmth, as they should have a period of nearly three months in a cold frame before being put into heat, and then they will make roots well; but, if started in heat too soon, they are more apt to rot at the base than to root.

The Forcing House.—To this we must now chiefly look for floral displays for some time to come. Forced Camellias are now in flower, and may be removed to the conservatory, and *Azalea amoena* is fast advancing to that condition. Early potted Roman and Dutch Hyacinths that have begun to grow may now be introduced to the forcing house to hasten their flowering period. Good crowns of Lily of the Valley, and of *Spiræa japonica*, after remaining some time in a cold frame, should also be introduced into heat, likewise pots of Solomon's Seal and Salvias, Deutzias, Kalmias, Weigelas, Rhododendrons, Lilacs, *Luculia gratissima*, *Forsythia viridissima*, *Dicentras*, and many other plants from the open air or cool conservatory, may likewise be potted and started in the forcing house.

Such plants as Lilacs, and Forsythias, that have leafless branches when at rest, should be sprinkled over head with tepid water two or three times a-day to assist them to break their buds. If there is convenience for storing a few plants of these in a corner, so that their roots may be covered with soil, there is no necessity for potting them, but in that case the plants not being in pots are only used for furnishing cut flowers. Rested plants of *Eucharis amazonica* may be started into flower by plunging them in a brisk bottom heat, and watering them liberally. *Sericographis Ghiesbreghtii* is a useful winter plant if forced a little. Young plants of *Euphorbia jacquiniæflora* and Poinsettias should be kept close to the glass, and plunged in a gentle bottom-heat. *Hebeclinium ianthinum* should be kept in a brisk moist temperature and abundantly watered for flowers after Christmas; young Salvias, if potted into 6-inch pots, pinched and forced, make fine flowering plants for the conservatory, and young Fuchsias may be treated like Salvias. *Justicia speciosa* is a fine winter-blooming plant, and also one that is easily grown; plunge it outside in summer, and preserve a stocky habit by means of pinching, and take the plants into a greenhouse in winter, introducing them, as required to flower, into the forcing house.

MARKET GARDENS.

Cut over Asparagus, save the stalks bearing the finest berries for seed, and transfer the others to the rubbish heap. If Cauliflowers have not been pricked into frames for the winter, do so at once; but do not keep them too close or warm. If the plants be strong, they may be left out longer than weaker ones; but, in that case, four or five rows of short stakes should be inserted among them to support a covering of mats in case of hard frost. Tenderly-nursed plants, as a rule, perish when planted out in spring, strong plants stand a hard winter best and a mild one worst, and medium-sized or small plants do best for mild winters; therefore they require much care and attention to keep them safe. Lettuces sown in frames will now be up, and must be exposed throughout the day if the weather be fresh and fair; but, if wet and frosty, the sashes must be kept on the frames and tilted up, unless the frost be severe, when they must be shut up altogether. To keep the plants clean and dry is the sole secret of success in winter with young Lettuces, which must be kept sheltered from birds, and a little lime should be strewn over them to prevent the ravages of slugs. Earth up late crops of Celery, and in giving the final earthing close up the soil around the necks of the plants at the top of the ridges. Prick out some autumn-sown plants thickly in rows, from 9 inches to 1 foot apart, again to be transplanted into rows 2 feet apart, to yield leaf-stalks for soup in spring. Lift Beet and store it in ridges, and lift Salsafy and Scorzonera roots and lay them in thickly in a shady corner, from which they may be removed as required for market. Lift Rhubarb and Seakale roots for forcing, and prepare beds for receiving them. The beds, if for forcing at once, should have 18 inches or 2 feet of fermenting manure in the bottom, over which should be placed some soil, then plant the roots thickly together, cover them over with a layer of litter, and over the whole place some hoops and mats, again covering with litter. The Seakale may also be planted in beds made 4 or 6 feet wide, with 2-feet sunk alleys between them, and in these beds the roots may be planted as thickly as possible, in lines across them. Here they may remain until they are required for forcing, when the alleys should be packed with fermenting manure, and some placed over the surface, and hoops and mats over that. Cover Mushroom beds with mats, to throw off rains, and see to the spawning, earthing up, and covering with litter of lately-built ridges. Great care should be taken to guard against rains, as last year, from so much wet, the produce was small, and in many instances the spawn was entirely killed. Clear off refuse vegetables such as Tomatoes, Vegetable Marrows, French Beans, and stumps of the Cabbages, &c. Manure, trench, and ridge every spare piece of ground, but portions on which it is intended to grow root crops next year should not be manured just now, as that would cause the roots to ramify; deep working of the soil, however, is very beneficial to these crops.

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

I HAVE read Mr. G. F. Wilson's letter (see p. 351) on this subject with much interest. If the proposal of guinea membership is not too late, it would, if adopted, doubtless prove useful in infusing into the Society a larger amount of the horticultural element than it at present possesses. As to the financial embarrassments, I can see but one way out of them, and that is the plan shadowed forth by Mr. Wilson, viz., to hand over the Kensington Garden and its liabilities to Her Majesty's Commissioners of the Exhibition of 1851. This seems the right course to pursue. The Commissioners are not enemies but

friends to horticulture. There is, I believe, every disposition to treat on liberal terms with the Society, and, while making the gardens, as they ought to be, a school of horticulture for all comers, they would still be a home for the Society, and a place of special resort, and it may also be of special privilege to the present fellows. Let the Society's debt be removed and the two bodies, the Council of the Society and the Commissioners, will, doubtless, arrange matters on equal terms, and possibly under one governing head. The Society might gain immensely by the latter arrangement; freed from debt, its skill and energy would be left free to develop and illustrate the horticultural resources at its command. With Chiswick for its home and its workshop, and Kensington, free of cost, for its exhibition ground, it would be infinitely stronger for its proper work than now. The time seems opportune for consummating some such arrangement; the difficulty will probably be to find a medium for negotiation. It is doubtful if the Commissioners would be willing to treat with the Council that merged out of the confusion of the *coup d'état*, or, whether if they did, the result would be legal, and possibly the old Council would refuse to act. I hardly know what would be said to a deputation of fellows to the Commissioners, or how far the results, if endorsed by the fellows, would be legal. Of this, however, I am confident, that the case is so desperate that nothing but what may seem to many a desperate remedy will suffice to mend or cure it. That is cut the Society's nominal ownership with South Kensington asunder and leave all its liabilities behind it. D. T. FISH.

CURIOUS DESTRUCTION OF EVERGREENS.

MR. J. B. PARSONS, the eminent nurseryman of Long Island, told some curious facts to the American Rural Club the other day respecting the action of frost in his nurseries at Flushing. A severer battle, he said, than we have ever known has been waged with sun and frost; and, although we are not conquered, we gather up our dead as men gather their friends from a human battle-field. The worst of it is that we can learn no lesson from our losses. The plants native to northern regions, like the Hemlock and the Arbor vitæ, have suffered most severely, while those which have been considered most tender have entirely escaped. Of groups of them one is unhurt, and two are killed root and branch. One English Yew in my grounds is entirely dead, while another in the same grounds is very little injured. One *Picea cephalonica* and one *Picea Parsonsii* dead, and one of each in the same grounds unhurt. One-half in length of a hedge of Siberian Arbor vitæ killed, the other half fresh, green, and unhurt. A hedge of evergreen Thorn, four years old, with the tops killed, and at a short distance another one year old unhurt, while the young plants in the nursery are coming out fresh and green as ever. Rhododendrons in the open ground are uninjured. They are simply made deciduous. The old leaves fall off and young shoots come out in great abundance. Thus we learn nothing from our losses, and must consider them simply accidents, which will probably not occur again, and which need not discourage us from planting as before. My theory of the cause of this injury will, I think, be verified by the facts. It must be recollected that we often have a warm season in January, and sometimes in March, succeeded by intense cold, but without any injury to plants. The last winter was one of very steady cold, and there was no warm weather either in January, February, or March. We must not then attribute to frost alone the disastrous effects. The ground has never been filled with moisture since the dry year of 1870. The rains of last summer did not penetrate deeply, and the whole of last winter was so free from rain that nearly all cisterns were exhausted. The soil, therefore, became as dry as dust. Now, it is well-known that if the root of a plant is exposed to the open air when the cold is extreme, it will perish, but if it is covered in the earth it is safe. The moisture in the ground, freezing with the earth, forms a casing around the roots through which the cold cannot penetrate. But if the soil is perfectly dry, there is no solid encasement for the roots, and the frost passes freely in killing the delicate fibers. Such was the state of the soil last winter.

Forming a Cricket Ground.—I am about to make a cricket ground in the park, which is well drained, but which consists of a strong clay soil. Will you kindly give me some information as to the best way to proceed in the matter after removing the turf, which of course will be replaced.—J. B., *Darlington*. [A gentleman, practically acquainted with the treatment of ground work of all kinds, to whom your question has been submitted says:—"After taking off the turf, dig out, and remove to one side, 7 inches of the top soil and turn over the sub-soil one spit deep, to allow surface water to freely percolate into the drains below. After well treading and consolidating the sub-soil to prevent unequal settlements, overlay it with 4 inches

in depth of burnt ballast (which might be burned on the spot, as the ground is said to be a strong clay soil), household or furnace ashes, brick-rubbish broken very fine, or any other similar mixture of a porous character. Then cover the whole over with 3 inches in depth of the top soil, relay and beat well the turf in the usual manner. The Finsbury Park cricket ground, 9 acres in extent, has been formed in the manner just described; the sub-soil there is strong hard clay, but nevertheless the ground is always dry and elastic."]

Boiler Incrustations.—In reply to Mr. Bell's inquiry (see p. 370), I have to say that I consider the use of either soda ash or caustic soda the most effective in preventing ordinary incrustations in boilers. I am unable to answer the latter part of his inquiry—namely, "How much is necessary?"—not knowing the character of the water which he uses—a point on which the amount to be used solely depends. The harder the water (that is, the more carbonate and sulphate of lime it contains), the more soda ash will be required to be used. Soda ash in excess, however, does not injure the boilers. Probably he might find the addition of two or three ounces of soda ash to 100 gallons of water to effect the desired result.—WILLIAM H. WARSON, *Braystones, Beckermel*.

LAW NOTE.

THE Court of Exchequer was called upon the other day to apply the law which Lord Campbell introduced, to what, curiously enough, lately happened at the house in which his Lordship lived. A person passing by Strathead, near Hounslow, formerly Lord Campbell's house, but now occupied by Mr. Mitchell Henry, was killed by the fall of a tree. Before Lord Campbell's Act was passed such an accident could not have come before a court of law, because the grievance was said to die with the person. This was hard enough upon the widow and children of the sufferer, if he left any, and seemed almost like an inducement to railway companies and others to kill their passengers outright instead of only maiming them. Lord Campbell, therefore, introduced an alteration in the law, by means of which the relations of the man killed at Strathead were enabled to bring an action. The negligence of the gardener who felled the tree was unquestionable, but damages could scarcely be obtained from a gardener, and it was hoped to make out that he acted as servant for some more responsible person. Who was the man's master? however, was not a very easy question to determine. He was hired by another person (Mr. Eyles), who was paid by Mr. Waterer, who was paid by Mr. Mitchell Henry. When the new Judicature Act has come into operation, a plaintiff under such circumstances will be allowed to sue all three, and leave the Court to determine who has to pay the damages. At present, however, the plaintiff is only allowed one string to his bow, and he first brought his action against Mr. Waterer. Mr. Baron Martin, who tried the case, thought that the gardener in default was not sufficiently under Mr. Waterer's control to be legally his servant, and the full Court has now consented to consider whether Mr. Baron Martin was right. So that eventually one of Lord Campbell's trees will settle the law under Lord Campbell's Act.

COVENT GARDEN MARKET.

NOVEMBER 7TH.

Flowers.—Chrysanthemums now form the bulk of pot-plants as well as cut flowers, but Fuchsias, Heaths, Solanums, Begonia Weltoniensis, Chinese Primulas, Cyclamens, and many others are also good and plentiful. Amongst cut flowers white Camellia blooms predominate; but of Gardenias, Tuberoses, Bouvardia jasminiflora and others, Epiphyllums, Roman Hyacinths, Cyclamens, Cinerarias, Violets, Rose-huils, Pelargoniums, and Carnations there is also abundance.

Fruit and Vegetables.—English Grapes are more than sufficient for the demand. Of Pines there is an unusually large supply. Peaches, with the exception of a few of the Salway variety, are over, as are also Figs and Melons. Capsicums are still furnished in large quantities, and of Pears and Apples there has just been a large importation from France; but, with the exception of some of the Pears, they are of inferior sorts. There is a goodly quantity of Truffles and garden Mushrooms in the market.

Prices of Fruits.—Apples, per half-sieve, 9d. to 1s.; Chillies, per 100, 2s. to 3s.; Cobs, per lb., 1s. to 1s. 6d.; Chestnuts, per bushel, 15s. to 20s.; Filberts, per lb., 1s. to 1s. 6d.; Grapes, hothouse, black, per lb., 1s. to 6s.; Muscats, 2s. to 6s.; Lemons, per 100, 8s. to 14s.; Melons, each, 2s. to 4s.; Oranges, per 100, 12s. to 24s.; Peaches, per doz., 6s. to 12s.; Pears, per doz., 1s. to 4s.; Pine Apples, per lb., 3s. to 6s.; Tomatoes, per doz., 1s. to 2s.; Walnuts, per bushel, 8s. to 12s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 1s. 6d. to 3s.; Beet, Red, per doz., 1s. to 2s.; Brussels Sprouts, per half-sieve, 2s. 6d.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 3s. to 4s.; Cucumbers, each, 6d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horse-radish, per bundle, 3s. to 4s.; Leeks, per bunch, 3d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 2s. 6d. to 4s.; Button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Potatoes, per bushel, 2s. 6d. to 4s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Salsafy, per bundle, 1s. to 1s. 6d.; Savoy, per doz., 1s. to 2s.; Scorzoner, per bundle, 1s.; Seakale, per punnet, 3s. to 4s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, per bunch, 3d. to 6d.

THE GARDEN.

"This is an art

Which does mend nature : change it rather ; but
THE ART ITSELF IS NATURE."—*Shakespeare.*

SEA-COAST GARDENING.

Down by the sea in South Devonshire is not a bad place in which to live at this season of the year—or, indeed, at any other season. Mr. Barnes tells us of Lilacs blooming in Mr. Burrigge's garden at Exmouth. I met with a similar phenomenon in the garden of the Imperial Hotel, at Exmouth, in the early part of October—viz., *Berberis Darwinii*—in full bloom; not a sprig here and there, but regularly sheeted with bloom from bottom to top, and not one plant only, but every plant in the garden. In other gardens in Devonshire I found this *Berberis* loaded with fruit; but, in the garden of the Imperial, there was not a fruit to be seen, and the golden glow of flowers was quite enchanting. In another garden close by, I had, in driving past, almost cheated myself into the belief that a large Lilac bush was in full bloom; but a closer inspection revealed the fact that it was the Chinese Privet, literally a mass of blossom. All the Privets are capital seaside plants, especially the newer evergreen ones; and, as a covert plant, *Leycesteria formosa* does capitally, the fruit being much liked by pheasants—indeed, *Leycesteria*, Jerusalem Artichokes, and Buckwheat may be pronounced the best decoy for pheasants that can be used. It is singular that the Cork tree and evergreen Oaks are not more used than they are as seaside plants, as they flourish most successfully. Of this fact I saw some noble examples many years ago at Lord Leicester's noble estate at Holkham, in Norfolk. There the evergreen Oaks form splendid timber trees, some, I should think, 10 to 12 feet in girth of stem. The finest group of Cork trees I have ever met with was at Haynes Park, near Bedford. I need scarcely remark that the Arbutuses form most interesting objects at the present time, as they are clothed with flowers and laden with their many-tinted Strawberry fruit at the same time. These are perfectly at home by the sea-side in North Wales as well as South Devon. Lambert's Cupressus, sometimes called *C. macrocarpa*, may be seen in wild luxuriance by the sea-side, and a graceful and noble tree it forms; indeed, a visit to Devonshire, especially to the more favoured nooks, makes us northerners quite jealous of the great luxuriance of trees and shrubs which, in the midlands, we consider it almost a feat to keep alive. I need scarcely say that the French Tamarisk, with its elegant Asparagus-like foliage, looks well at this season, while the Sea Ragwort, a plant resembling one of frosted silver covered with gold, is most telling everywhere. Another class of plants which appear quite at home near the sea are the Cotoneasters, *C. macrophylla* and *Simmondsii* being masses of rose-tinged crimson berries. Mr. McNab has recently given us some examples of the former, as suitable for wall decoration, and, fine as the examples are, I would advise all who wish to see this tribe of plants in full glory to intermix them with the naked-flowered Jasmine, when the play of crimson and gold will be most interesting. The finest trained example of *C. macrophylla* I have ever seen was, many years ago, at West Wickham, in Kent, then the residence of Mr. S. Jones Boyd. It covered a wall, the termination of a terrace walk, and was as perfect a specimen of geometric training as could be desired. Fine examples, *au naturel*, may be seen at Newstead Abbey, and I saw once, I think, at Claverton, near Bath, some examples planted on the top of a retaining wall, with the branches drooping some 10 or 12 feet, and clothing the wall very picturesquely. It may be worth while to mention that Mr. George Wheeler, Nurseryman, of Warminster, made, twenty years ago, Cotoneasters a speciality. He had a complete collection, many of them worked as standards at various heights, and very interesting little drooping trees they formed. The *Coluteas* and *Spiræas* appear quite at home by the sea-side, several *Spiræas* being now in fine bloom at Exmouth. Fuchsias, especially the old nearly hardy *Riccartoni*, are in their glory, and so is "Bailie Nichol Jarvie's" *Poker* (*Tritoma Uvaria*), the glowing spikes of fiery red being most effective. Hydrangeas make splendid bushes near the sea, the flowers having almost every shade of colour from pale

blue to deep pink. The cause of these changes is not easy to explain, especially as the two colours frequently occur on the same truss of bloom; possibly, however, the real cause is iron in the soil. In Blackheath Park, in a strong top spit loam, half the flowers would come pink, the other half blue. We have had them blue on the heavy Wimbledon peat, and also by the use of iron filings in the soil, or water from the blacksmith's forge. This will never fail to produce blue flowers, but it should not be used until the flowers begin to develop themselves, and then only once or twice a week. The most effective, however, of all plants, at this season either for seaside planting, or as a shelter for wildfowl, is the Pampas Grass. Years ago I planted a large island near Conway, and at the present time I have no doubt the nodding plumes may be counted by the thousand. But this is not all; the foliage of the Pampas, either in winter or summer, forms a grand shelter for game. It is a plant that will grow almost anywhere, and in any soil; but still will pay well for good treatment. If a grand specimen is wanted, a cubic yard of soil should be removed and replaced with a compost of loam, leaf-mould, and rich manure, rounding it up so that when it subsides, as it necessarily must do, the top will be above the level of the surrounding soil. At Lord Carrington's may be seen some remarkably fine plants, but those which are planted near the drain which carries the sewage of Wycombe through the garden, especially where the sewage is occasionally used for flooding the Strawberry (or other) beds, are wonderfully fine. Such plants are a great ornament, and serve a good purpose in the way of shelter at the same time.

W. P. A.

THE TRUE ORIGIN OF THE DAHLIA.

As you have found room for the poetical but fabulous history of the introduction of the Dahlia tuber as an edible root in the quotation from "Holland House," its true origin may be worth recording in your columns. The first mention of the plants occurs in Hernandez, who published a history of Mexico in 1651, and who figured two separate species. Menonville who was employed by the French minister to steal the cochineal insect from the Spaniards, was the second to notice its existence. The first scientific description was given by the Abbé Cavanilles from a specimen which flowered at Madrid in 1790, who named the plant after his friend Andrew Dahl, the Swedish botanist. The Dahlia was sent to Europe from the Botanic Gardens of Mexico, to the Royal Gardens, Madrid, where it first flowered in 1789, from whence it was introduced to England by the Marchioness of Bute in the same year, but this single plant speedily perished, and it did not again appear in this country till the old single variety *coccinea* was flowered by Fraser, at Chelsea, in 1803, and figured in Curtis's *Botanical Magazine*, plate 762. This plant also perished. Meantime Cavanilles sent specimens of the three varieties then known to the Jardin des Plantes, in 1802, where they were successfully cultivated, and numerous varieties were produced in France between that date and 1814, when, on the return of peace, the improved flower created a great sensation among English visitors to Paris, which led to large importations of the root during the ensuing winter. Lady Holland sent seeds, not roots, from Madrid in May, 1804. The first plant flowered at Holland House in the September following, and was figured in Andrews's "Botany." The seeds ripened in 1805, and were generally distributed in 1806. The original plants at Madrid do not appear to have yielded many varieties—not more than three are mentioned. Humboldt, however, who found the plant growing in sandy meadows, 5,000 feet above the sea, sent home fresh seed from Mexico in 1804, to Paris and Berlin, from which the numerous varieties subsequently obtained were derived. The first double flower was produced at Berlin in 1809, and even so late as 1818 Sabine was told of a double white, but "doubted its existence." It is interesting to remark that De Candolle expressed his opinion that we should never see a blue Dahlia, on the ground that blue and yellow, being the fundamental types of colour in flowers, mutually exclude each other. The root was included in the *Bon Jardinier* for 1817 among the "Plantes Potageres," but no mention is made of its use for Palestine soup.

JOHN W. FORD.

AMONG *Chrysanthemum* shows in the neighbourhood of London, that of Messrs. Dixon & Co., of the Amhurst Nurseries, Hackney, deserves notice, as being now in the height of perfection. The flowers are exhibited in a span-roofed house, 50 feet by 20 feet, in endless variety, and are well worthy of a visit by all admirers of this interesting family of plants.

NOTES OF THE WEEK.

— THE very remarkable collection of Apples and Pears shown at South Kensington, on Wednesday last, by Mr. Scott, of the Merriott Nurseries, Crewkerne, will be on view at THE GARDEN office during the coming week, where any of our readers interested in the matter may see them. There are 600 kinds of Apples alone, and 350 kinds of Pears.

— WE have received photographs of the fine wall of Cordon Pears at Holme Lacey, Herefordshire—a remarkable plantation, as we can testify from a recent visit. Mr. Scudamore Stanhope informs us that the fruit was finer on the trees, both as regards size and flavour, than those grown on any other form of tree. We hope to publish an engraving of the trees, and say something of their culture, at a future time.

— THE Planes on the Thames Embankment show now, after losing their leaves, a strong well-ripened growth, and are becoming fine sturdy trees. They are quite as good as trees of the same age on the Parisian Boulevards, and in some cases they already bear the round little seed-vessels, which look so pretty on the trees in winter. Thus the predictions of those who foretold the failure of the trees on the embankment have come to nought.

— SEVERAL communications on the Phylloxera and its ravages were made at the Paris Horticultural Séances of October the 20th and 27th. Amongst others, M. Planchon communicated the result of his examinations in America and in Europe. He states that the American and the European insect are identical, and adds that there exists in America an Acarian, which is a furious enemy of the Phylloxera, and that he had received a number of individuals which he should endeavour to acclimatise in France.

— TO prevent the germination of Potatoes in winter stores, it is recommended to expose them to the vapour of sulphurous acid. If not entirely effectual in accomplishing the object, it will at least retard or modify the sprouting to such an extent as to render the injury caused thereby very slight. The flavour of the Potato is not affected in the least by this treatment, nor is its vitality diminished, the action being simply to retard or prevent the formation and growth of the eyes.

— DR. E. REGEL, the distinguished botanist and director of the Botanic Garden at St. Petersburg, has recently published a monograph of the Vines of North America, Northern China, and Japan, under the title of "*Conspectus specierum generis Vitis, &c.*" The species are reduced by Dr. Regel to the following:—*Vitis arborea*, Linn.; *V. heterophylla*, Thbg.; *V. incisa*, Nutt.; *V. inconstans*, Miq.; *V. vulpina*, Linn.; and *V. Labrusca*, Linn. The treatise concludes with a disquisition on the origin of the cultivated Vine, in which the author states his reasons for believing it to be a hybrid between *V. vulpina* and *V. Labrusca*.

— WE are informed that Mr. George Morrison, for many years head gardener to Lord Wolverton, has left Stanmore Park, in consequence of changes in the establishment. Previous to his leaving the neighbourhood, Mr. Morrison was entertained at a dinner given by the leading gardeners of the district, and presided over by the Rev. J. L. Bernays, rector of the parish. After dinner, speeches were made expressive of the high estimation in which Mr. Morrison was held, and it was resolved to present him with a handsome testimonial prior to his taking his final departure.

— THE following results of the introduction of the Eucalyptus globulus into Africa and the West Indies are described by M. Gimbert in a recent lecture before the Académie in Paris. Speaking of the plantations which were made of these trees at the Cape of Good Hope, he says:—"Within two or three years they completely changed the climacteric condition of the unhealthy parts of the colony. A few years later its plantation was undertaken on a large scale in various parts of Algeria. At Pondook, twenty miles from Algiers, a farm, situated on the banks of the Hamyze, was noted for its extremely pestilential air. In the spring of 1867 about 13,000 Eucalyptus were planted there; in July of the same year, the time when the fever season used to set in, not a single case occurred; yet the trees were not more than 9 feet high. Since then complete immunity from fever has been maintained. In the neighbourhood of Constantina the farm of Ben Machydlin was equally in bad repute; it was covered with marshes both in winter and summer. In five years the whole ground was dried up by 14,000 of these trees, and farmers and children enjoy excellent health. At the factory of the Gué de Constantine, in three years a plantation of Eucalyptus has transformed 12 acres of marshy soil into a magnificent park, whence fever has completely disappeared. In the island of Cuba, this and all other paludic diseases are fast disappearing from all the unhealthy districts where this tree has been introduced. A station-house at one of the ends of a railway viaduct in the department of the Var was so pestilential that the officials could not

be kept there longer than a year; forty of these trees were planted, and it is now as healthy as any other place on the line."

— THE new schedules for 1874 of the Royal Horticultural Society are now ready, and can be had on application to the Secretary.

— THE gardens at Apply Towers, in the Isle of Wight, are undergoing complete renovation. The old Vineries and other fruit-forcing and plant-houses are being removed, and new ones erected in their place by Messrs. Bolton, of Norwich. They are to include a splendid range of lean-to Peach houses, and the Orangery, which is already erected, is one of the finest in the country. Both the flower garden and pleasure grounds, too, are undergoing considerable alteration.

— IN the *Bulletin d'Arboriculture* the employment of flowers at funerals is thus described by M. Van Hulle, as witnessed by him a few months since at Munich:—"Very few wax candles were employed, but instead of them there were other ornaments, and especially garlands of leaves and flowers. All around the bier a broad sloping border of turf had been improvised, in which were pretty flower-beds, filled with a variety of fragrant and beautiful flowers." M. Van Hulle concludes by observing that this arrangement appeared to him far more pleasing than the pall of crape, besprinkled with silver tears, used on such occasions in France and Belgium.

— ON the question of "Venomous Caterpillars," as to the existence of which much diversity of opinion appears to prevail, we observe that Mr. Riley, the State entomologist for Missouri, has, in his fifth annual report, devoted a chapter to this subject, and states that he is acquainted with fifteen indigenous larvæ having so-called urticating powers, and in every instance the action is mechanical. Those observers who place so much stress upon the fact of contact with a hairy larva causing pain, should not let surprise get the better of their judgment, nor, in the case of those residing abroad, should they allow themselves to be influenced by native superstitions. The position is simply this: any hairy larva is likely to cause irritation mechanically, from particles of the numerous hairs piercing the skin; no case has yet been proved in which such irritation is the result of venom, such as that of *Urtica* among plants.

— A CORRESPONDENT of the *Times*, who signs himself "F.R.S.," opposes the nomination of Dr. Hooker to the Presidency of the Royal Society, vacant by the resignation of the Astronomer Royal, on the grounds that "the director of Kew Gardens would be in a very anomalous position as President of the Royal Society, because in this latter capacity he would be an *ex officio* Trustee of the British Museum. There has been of recent years somewhat of a rivalry between the botanical department of the British Museum and the more recently formed herbarium at Kew; consequently, by this selection, the action of the president of the Royal Society as trustee of the museum would be fettered, and the Government would be precluded from obtaining the valuable advice of the president and council of the Royal Society on those questions which must necessarily arise on the reconstruction of the natural history departments of the British Museum when they are removed, as they soon will be, to South Kensington."

— AMONG the papers presented to Parliament relating to the South Sea islanders is a report by Captain Simpson, of her Majesty's ship *Blanche*, giving an account of his visit last year to the Solomon and other groups of islands in the Pacific Ocean. While at Isabel Island, from which seven women and three men were kidnapped in 1871, Captain Simpson, with a party of officers, went a short distance inland to visit one of the remarkable tree villages peculiar, he believes, to this island. He found the village built on the summit of a rocky mountain, rising almost perpendicular to a height of 800 feet. The party ascended by a native path from the interior, and found the extreme summit a mass of enormous rocks standing up like a castle, among which grow the gigantic trees, in the branches of which the houses of the natives are built. The stems of these trees rise perfectly straight and smooth, without a branch, to a height varying from 50 to 150 feet. In the one Captain Simpson ascended the house was just 80 feet from the ground; one close to it was about 120 feet. The only means of approach to these houses is by a ladder made of a Creeper, suspended from a post within the house, and which, of course, can be hauled up at will. The houses are most ingeniously built, and are very firm and strong. Each house will contain from ten to twelve natives, and an ample store of stones is kept, which they throw both with slings and with the hand with great force and precision. At the foot of each of these trees is another hut, in which the family usually reside, the tree-house being only resorted to at night and during times of expected danger. In fact, however, they are never safe from surprise, notwithstanding all their precautions, as the great object in life among the people is to take each other's heads off.

THE FLOWER GARDEN.

HORSE-TAILS.

(EQUISETUM.)

THESE form a very singular family of leafless plants, distinguished from all others by their jointed stems, regularly whorled branches, and curious fructification. We have in Britain nine species, which are mostly regarded as "weeds," and rank, in the estimation of the illiterate or unobservant, much on the same level as "Thorns and Thistles" and other things that cannot be too soon extirpated. The whole genus, however, is most interesting in the remarkable form and



Equisetum sylvaticum.

structure of the plants, and two at least of our native species are ornamental in the highest degree. These are *E. Telmateia* (the Giant Horse-tail) and *E. sylvaticum* (the "Horse-tail of the woods"). The former is a plant of very noble port and much grace when well-developed, and grows from 3 to 6 feet high in favourable soil and positions. The stem is furnished from top to bottom with spreading whorls of slender, slightly drooping quadrangular branches, the whole forming a pyramidal outline of very distinct and pleasing effect. It is a highly ornamental subject for planting in the hardy Fernery, the artificial bog,

shady peat borders, near cascades, or among shrubs which grow best in moist hollows in vegetable soil. In the Botanic Garden, at Oxford, this plant is finely grown in a long line at the back of a Fernery, presenting a most graceful appearance, and a most effective contrast to the plants in front. Nearer London, we may mention that we have seen it cultivated in great perfection in the gardens of Mr. Wilson Saunders, Hillfield, Reigate. Having had very convincing proofs



Specimen of Equisetum in a pot.

of the strikingly effective character of this plant when well grown, we have been not a little surprised to find that it has not as yet been thought worthy of association with sub-tropical subjects at Battersea Park and elsewhere. We are convinced that, if introduced amongst fine foliage plants in our parks, its beauty would be speedily recognised and appreciated.

Of a different character, but not less attractive in its own style, is the second species which we have mentioned—*E. sylvaticum*. This is, compared with the other, a dwarf plant, but one which is exquisitely graceful when well grown. It differs from all the other species in forming branching stems after some time, which in their minute and delicate ramifications almost rival the beauty of some of the *Ferulas*. Our illustrations represent, first, the plant in the earlier stage of its growth, showing, incidentally, the fruiting stems crowned with the curious conical or ovoid fructification, which consists of several whorls of shield-shaped, shortly-stalked scales (usually brown or black), under each of which are about six or seven capsules filled with minute spores. When examined under the microscope, each of these spores is seen to have at its base four thread-like filaments, rolled spirally round the spore as long as it remains moist, but uncoiling elastically when dry, and projecting the spore to some distance.

Our second illustration represents this plant as grown in a pot by Mr. Ware at the Hale Farm Nurseries, Tottenham, and sketched by one of our artists from a specimen forwarded to us by Mr. Ware for inspection. We must say, however, that justice has not been done to the plant in this figure, which fails to represent the peculiar aspect of the sub-divided, many-jointed, and many-sheathed branchlets, while at the same time it conveys no bad general idea of its elegantly-tufted and feathery appearance. This plant is also very suitable for rock-work or the margins of ornamental water. On rock-work, however, it requires to be looked after, as it spreads very much at the root, and is apt to become a weed unless kept within due bounds. Some time since we were very much pleased to see several plants of it growing amongst the rare Alpines on the rockery of Messrs. Backhouse & Son, at York. These were self-introduced, the spores or roots having most probably been conveyed in the soil used to furnish the structure; and, though growing side by side with gems from Mont Cenis or the Carinthian Dolomites, they not only did not suggest any idea of "weediness," but even served very much to enhance the wild beauty of that noble rock-work. In some parts of the country all species of the Horse-tails are familiarly known, amongst farm-servants as the "Scouring Rush," as they are much used in scouring churns, pails, and other wooden vessels. The brittle stems contain a large proportion of silica, and a wisp of them is, for scrubbing purposes, a kind of natural sand-paper. Our non-botanical readers should not confound

any of these plants with the Mare's-tail (*Hippuris*), which is an aquatic plant of the *Oenothera* or Evening Primrose family; and, although it bears a general resemblance in its whorled stems to some of the more slender species of *Equisetums*, it has no affinity with them whatever. W. M.

BEDDING VIOLETS.

In all places in which spring-bedding is done well, Pansies and Violas play an important part. The "Cliveden" bedding Pansies have become familiar to all of us. In some respects, they still occupy an almost pre-eminent position; in others, they have been much improved upon, but in some instances the demand for them has been so great that spurious kinds have been substituted for them. One cause of this is to be found in the fact that these Pansies re-produce themselves but indifferently from seed, and, therefore, they require to be propagated either by means of cuttings or by root-separation to maintain stock; another cause, too, is evidenced in the somewhat indiscriminate manner in which seed of Pansies, saved in colours of blue, yellow, white, and purple, is sold as Cliveden seed, whereas it is but the produce of German-grown plants, scarcely a single seed having been saved from a Cliveden variety. It is worthy of note, moreover, that the true Cliveden blue Pansy does not seed, and that the other kinds do so but sparingly, so that it is too often but a species of deception to offer seeds purporting to be from the Cliveden kind. Since Mr. Fleming made his particular forms so popular, other raisers have followed in the same path, and now the name of bedding Pansies is almost legion. Amongst other novelties, a race of Tom Thumb bedding Pansies have sprung up, presenting features of unusual dwarfness combined with a compact habit and wonderful blooming qualities. These are eminently adapted for small beds, or as carpet plants, or for the front lines of borders, and are very hardy and effective. Since the day when *Viola cornuta* became so popular, Violas have improved in quality to so great a degree that they now produce blooms as large and as stout as those of the ordinary Pansy, while, as a result of frequent crossing, the distinction between the *Viola* and the Pansy is so slight that ordinary observers are puzzled to find the difference. The first break from the old *V. cornuta* originated in *Viola* "Blue Perfection," the actual origin of which is still unknown. Then came seedlings of it, showing comparative improvements. *Viola lutea* is still remembered as a small-flowered yellow kind, very dwarf, and a wondrously free bloomer, and useful in its day. Following this came *Viola lutea grandiflora*, and better than this came *V. lutea major* and Dean's Yellow Queen, both robust large-flowered kinds. Co-existent with these have also sprung up a race of primrose or sulphur-coloured Violas, the best of which are Sulphur Queen and Corisandé, and both of these have blooms of a much better form than the pure yellows have; they present very pleasing hues of colour in the flower garden. We have at last a pure white *Viola* of the *Lutea* strain, and Messrs. Dickson have pure whites that differ materially from all others in habit. There are also purple self kind seedlings from the Perfection family, and Princess Teck gives a pleasing tint of mauve. So that in the family of bedding Violas now exist pure tints of blue, yellow, sulphur, white, purple, and mauve. Among them the following are the most effective:

Yellow Varieties.

Lutea Major (Parker).—A vastly improved form of *Lutea*; habit, free and vigorous; foliage, round and glossy. Blooms of good size, rather oval in shape, clear yellow, with a few dark lines round the eye. Blooms early and continuously, and most useful either in spring or summer.

Yellow Queen (Dean).—A strong-growing robust form of *Lutea*; habit, dwarf and spreading; flowers, large, clear straw-yellow in colour; foliage, glossy and round. Blooms very early in spring, and continues in flower all through the season.

Sulphur-coloured Varieties.

Sulphur Queen (Dean).—A very robust and spreading variety of *Lutea*; quite distinct in character. Flowers, large and round, clear sulphur in colour, with a few dark lines round the eye. Blooms very early and continuously, and is most useful either in the spring or summer garden.

Corisandé (Dean).—This variety owes its origin to *Lutea* crossed with a bedding Pansy. In habit it is dwarf and compact, but a free

grower; foliage, round and very glossy; flowers, delicate primrose in colour, large and full, and borne well up above the foliage. Blooms very early and continuously; altogether a first-rate kind.

White Varieties.

White Perfection (Dickson & Co.).—Habit, robust and upright, indicating relationship with *Viola stricta*. Flowers, clear paper-white, slightly streaked with violet round the eye; stout and rounded, and of medium size. A very showy variety, but most useful for summer bedding.

Snowflake (Dickson & Co.).—Habit of same type as preceding flowers, clear waxy-white, slightly pencilled round the eye, of a thick and leathery substance; blooms very profusely, and makes a most effective summer bedder.

White Swan (Dean).—This is a clear and distinct white-flowered form of *Lutea grandiflora*, but with a more compact habit; blooms very early and continuously; flowers of medium size, having a small blue blotch under the eye. A valuable acquisition either for the spring or summer garden.

Mauve-coloured Varieties.

Advancer (Dickson & Co.).—A very robust grower; habit, upright and branching; flowers, lilac, slightly shaded with violet, of medium size, stout, and rounded; blooms very profusely, and makes an effective bedder.

Princess Teck (Dean).—Habit, robust and spreading; foliage, dull green and pointed; flowers, delicate mauve, novel and distinct, furnishing a tint unobtainable from any other bedding plant; blooms very early and continuously, and makes a most useful spring and summer-bedding plant; the flower-stalks being long, the blooms are also useful for gathering in bunches.

Blue Varieties.

Blue Perfection.—This variety was found simultaneously both at Rotherfield Park, Hants, and at Wilton, and it was sent out both by Williams and Smith; habit, robust, dwarf, and spreading; foliage, deep green and pointed; flowers, bluish-purple, small, and thrown well up. A good summer bedding variety.

Enchantress (Williams).—A seedling from Blue Perfection, closely resembling it in habit; flowers, rather large, and of a lilac-purple shade. A very pleasing summer-bedding Violet.

Magnificent (Williams).—A robust form of Perfection; blooms well thrown up, and deep bluish-purple. A most effective summer bedder, and one of the best of the seedlings that have been raised from Perfection.

Blue Bell (Dean).—A cross between Blue Perfection and *Lutea grandiflora*; habit, robust, dwarf, and very spreading; flowers of good size; violet, shaded with blue, having a few dark lines round the eye, and thrown well up above the foliage; blooms very continuously all through the summer, and late into the autumn. Most valuable both for spring and summer gardening.

Lothair (Dean).—Habit, dwarf, spreading, and close; flowers, of good round form and substance, well thrown up above the foliage; clear indigo blue in colour, with a slight dark blotch in the centre, and shaded upper petals; blooms continuously all through the summer. One of the richest coloured violas in cultivation. Received a first-class certificate from the Royal Horticultural Society.

Blue, Border (Dean).—White ground, with heavy blue edging; blooms, large and rounded; habit, dwarf, and spreading. A very pleasing variety, and one which makes a capital summer bed.

Blue Bedder.—A seedling from Perfection, evidently crossed with some bedding Pansy; habit, dwarf and compact, yet vigorous; flowers, violet-purple, early, and makes a most effective bedding variety.

The Tory (Dickson & Co.).—Habit, robust; flowers, large, round, and of good substance; colour, bluish-plum, with dark blotch in the centre; blooms thrown well above the foliage. A fine showy variety, and one which makes an effective summer bedder.

Dickson's King (Dickson & Co.).—Resembles the Tory in general habit, and in size and shape of flower, which, however, is not so dark in colour as the Tory. A fine showy kind.

Eyebright (Dickson & Co.).—Habit, dwarf and compact; flowers, medium sized and round; rich blue in colour, with golden eye, surrounded by a dark disc; the blooms resemble small flowers of Pansy Imperial Blue. A pleasing and showy variety.

The Favourite (Dickson & Co.).—This variety bears a close resemblance to the King in all points, and is not in any way superior to that variety.

Queen Victoria (Cannell).—In general habit of growth, and size, and shape of flower this bears a close resemblance to the Tory, except that the flowers have more blue in them than that variety. An effective and showy summer bedder, and one of the best of this particular class.

Cultural hints respecting this class of plants may not be out of place. Just now, after these fine autumn rains, young

shoots are thrown up from the base of the plant, in some sorts abundantly, and in others but sparingly. All these bottoms should at once be lifted, and carefully pulled to pieces, the rooted shoots being dibbled thickly into some fine sandy soil, and the cuttings put into boxes or pans under glass, the former will make good flowering plants for the spring, and the latter for the summer. Where *Violas* or *Pansies* are to be used for both spring and summer bedding displays it is most advisable to put out as strong plants as possible for the first purpose in November, and a succession of late-struck cuttings should be kept for the summer use. The stronger the plants put out in autumn the earlier and better will be the spring bloom. The *Pansy* delights in a deep cool soil, not too highly manured, as that only induces rank growth. A top-dressing of sifted pot soil once in the summer, just after a good soaking rain, also assists greatly to prolong the blooming period.

A. D.

ALTERNANTHERA AMENA SPECTABILIS.

THIS plant having been distributed at a late period of the season, by the time that I was supplied with it there was no chance of getting plants of a sufficient size to enable me to estimate aright its real value in comparison with *amena*, which it so much resembles in the colour of the leaf. It is, however, much stronger and more robust in growth, and in this respect I find it a decided acquisition, growing freely and producing its rose-coloured leaves in great perfection under glass, fully verifying the description given of it by Messrs. Henderson. Should the same freeness and brilliancy of leaf-colouring be maintained when planted out in the flower-garden it will not lose its effectiveness by being placed in juxtaposition with *amena*, or any of the varieties in this popular group of decorative plants. For, charmingly effective and lovely as the brilliant leaf-tints of *amena* are where grown in a congenial soil and climate, it is, upon the whole, far too tender in constitution, and uncertain in its behaviour, to be generally relied upon; and, unless when grown in exceptionally snug and warm positions, it does but little good. It is to be hoped that in *A. a. spectabilis* we have found a real acquisition, as there is a growing demand for this class of plants. And as the subject of these remarks has been so extensively circulated, it will be desirable to know something of its behaviour out of doors during the present season. Nothing can be more disappointing than planting out large quantities of plants, relying solely upon vendors' descriptions, which are frequently over-coloured. Although I have every hope and confidence, from the behaviour of this plant under glass, of its future in the open air, I cannot vouch for its colour being maintained; and this is more particularly the point desirable to be ascertained. I did not observe that this plant has been used in any of the large garden arrangements about London. It would save much vexatious disappointment were all new plants of this class subjected to an independent medium of trial, and grown out of doors in sufficient quantities to thoroughly test their relative merits before sending them out. There is no doubt that some are submitted to the proper authorities for decision, but then it very often happens that such plants are fostered under glass, and vary so much in point of character, when planted out, as to be scarcely recognisable. Any one who has proved the bedding merits of *Alternanthera a. spectabilis*, will confer a benefit on others and on myself by describing its behaviour when planted out.

GEO. WESTLAND.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Terra-cotta Vases.—May these be safely left out of doors all winter, or must I move them under cover?—Q. [Terra-cotta will resist any amount of frost. Your vases may, therefore, stand out all winter, even with the earth in them, and will not be injured.]

Salvia scabiosæfolia.—This is a little-known, but very handsome hardy plant from Asia Minor, which endures our winters uninjured, and produces an abundance of delicately-coloured pink and white flowers. It grows freely in almost any kind of soil, and forms dense tufts about 2 feet high, the foliage of which, in summer, is completely hidden beneath the numerous blooms.—S.

Sagittaria japonica flore pleno.—As an ornamental aquatic plant, this is superior to our own native species (*S. sagittifolia*), not only for the sake of its double flowers, but because its characteristic arrow-shaped leaves last much longer, forming a more permanent ornament of the piece of water in which they are planted. A few roots stuck in the mud soon multiply the plants to any desired amount.—H. P.

Lawn Sand.—This certainly has the effect of clearing lawns of weeds. Mr. Pierpoint, seedsman, Warrington, who wished to try its effects before sending it to his customers, selected, as a trial ground, a space of Grass on which was a large quantity of Daisies. The effect on the portions tried was the destruction of the Daisies and the improvement of the Grass. It may, therefore, be safely said that it not only kills weeds, but that it also acts as a manure.—EDWARD GREEN, Bank Park, Warrington.

GARDEN DESTROYERS.

ON BEETLES WHICH INJURE CONIFERÆ.

By WILLIAM TIVENDALE, Houston.

IN the spring of 1865, I was requested by a landed proprietor to look at three young plantations which were very much damaged by the ravages of insects, and to suggest if anything could be done to get rid of them. On inspecting these plantations, I found that the trees had been three years planted, on ground previously occupied by a crop of trees, principally Scotch Pine, and that the insect which had done so much damage to the trees were the wood beetles—*Hylobius abietis* of Germar, and *Hylurgus piniperda* of Fabricius, two of the most destructive pests that arboriculturists have to contend with. The number of trees destroyed by these beetles exceeded 140,000. In tract No. 1, extent 16 acres, planted with Scotch and Austrian Pines, Larch, and a few Spruce and Silver Firs, at 3 feet apart, more than half of the trees were completely destroyed; in tract No. 2, extent 13 acres, planted at 3 feet apart, with Scotch Pine, Larch, and a few Spruce, more than two-thirds were rendered useless; and in tract No. 3, extent 14½ acres, not a living plant was seen, save about a dozen of Larches in a corner of the plantation which was a little damp, and even these were injured to such an extent that they did not look likely to live over the summer. On reporting this state of matters to the proprietor, he expressed his determination to get rid of the pests, if possible, in No. 1 and No. 2 plantations; but as there were no plants in No. 3 worth saving, he put cattle in to graze for a year or two, to see if that would tend to diminish the evil.

Hylobius abietis is $\frac{1}{2}$ inch long, $\frac{1}{2}$ inch in circumference, of a bright grey colour, and beautifully spotted over the cases of the wings. Its makes its depredations upon all sorts of Coniferæ, but the Scotch Pine is, doubtless, its favourite. In its attack upon the tree, it generally begins immediately above the surface of the ground, and eats greedily the bark all round, and gradually upwards, leaving the trees peeled into the alburnum, when they soon die. In the case of older trees, it makes no attempt to eat the rough bark on the bole, but seeks its way to the branches, and preys upon their tender bark. Here it does not eat the bark all round as it does on the stems of the young tree, but makes an attack here and there on the upper side of the branch, and seldom, if ever, makes a second attack at precisely the same place which is the cause of their being far less injurious to large than to small trees. I find that the wounds they make in the bark of the branch soon heals, leaving the tree little the worse. *Hylurgus piniperda* is a small dark-coloured beetle, 3-16ths of an inch long, and about 1-16th of an inch in diameter. It attacks the young trees in the same way as I have described, but upon older trees it has a different mode of working. It bores into the centre of the last formed terminal shoot, eats through the pith, seldom making its exit till it has arrived at the base of the bud, when it descends in search of another shoot to destroy in the same way; the shoots thus robbed of their pith soon wither, and hang on the trees for months before they drop off. Five years ago, a number of Weymouth Pines under my charge were fearfully infested with this insect, fully half of the terminal shoots of the branches were hanging—brown, yellow, and sickly by its ravages. I had all the affected shoots cut off with the pole shears, gathered carefully, and burned in a brisk fire. A cure was the result, the trees being now in a vigorous growing state, and apparently none the worse for having had such a quantity of their young shoots cut off.

Having shortly described the two beetles, their modes of operation, and the best method of getting rid of the small beetle upon large trees, I shall now detail our method of getting rid of both kinds of beetles in the young plantations referred to. The first thing I did was to pare off all the Grass from 8 to 10 inches round the trees that were not affected, and those that were affected, but likely to recover; this had a considerable tendency to keep the beetles off the trees, and made them easier seen when they were upon them. We then got a few carts of Scotch Fir branches from a recently thinned plantation, had all the small twigs and the most of the leaves cut off them, then we laid the branches here and there between the plants all over the plantations; the beetles congregated upon and under the branches, and preyed upon them with voracious avidity; a number of boys were set to gather the beetles off the trees and the branches. Each boy was supplied with a small glass phial, suspended by a cord from a button-hole of his jacket to allow the bottle to hang straight while the boy stooped in search of the beetles; each bottle had a wooden stopper. The boys, with a careful old man in charge to see that they did their work properly, searched the branches and trees for the beetles, which preyed in great numbers on and under the branches. Not one beetle of either kind was found upon the young trees for fifty that were upon the branches, which had to be lifted with great care, otherwise the beetles would drop from them

amongst the Grass and be lost for the time; the beetles were often found lying on their backs when the branch was lifted, so that it was necessary to look where the branch had marked the Grass, for even with the utmost care in lifting it some of them quit their hold. I have seen a boy take seven beetles, large and small, off one branch, or rather stick, about $3\frac{1}{2}$ feet long; branches are better to be a little heavy, as they lie more firmly on the Grass, and more readily arrest the progress of the beetles in search of food. The beetles generally begin their devastations about the middle of April, and carry on the work of destruction till the middle of June; then few are to be found till the beginning of August, when they again become more numerous till about the middle of September, after which there is scarcely one to be found, even in places where they have not been destroyed. I have heard it said that the best time to gather beetles was at 4 A.M., as that was their principal feeding time. In my experience this is not the case. I have looked for them from between 3 and 4 A.M. to between 9 and 10 P.M., and invariably found them most numerous upon these trees and branches from 8 to 11 A.M., and from 4 to 7 P.M., and on wet days they are only found on the under side of the branches. They keep well in the shade both on the trees and the branches when the heat of the sun is strong; they neither like much heat nor much cold.

We gathered the beetles in the two plantations for five weeks in the spring, and three weeks in the autumn of 1865, and the number destroyed was 15,100. We gathered again in the following spring, when we captured 2,300, and in the autumn we only got 100; total, 17,500 beetles. I do not think we collected more than one small beetle for twenty of the large ones. The beetles were counted by the man in charge at dinner-time and at night. Each boy's gathering was marked in a book; the boys knew this was done and it made them strive with each other who would gather most. The beetles were counted upon a large flat stone, and after the number was ascertained they were destroyed with a small flat stone. These plantations were beat up with Weeping Birch, Plane, Scotch Fir, and Larch, in the spring of 1867, and are growing well without any appearance of beetles. Plantation No. 3, after cattle being in it for three years, had to be cleared of the beetles in the same way as Nos. 1 and 2. They were only gathered one season, however, before planting. Pits were made for all the principals, which should be done in old Scotch Fir ground; this plantation, too, is doing well. When it is desired to plant immediately after a crop of Scotch Fir is cut down and cleared away, it should be proved whether the ground is in a foul state or not. This can be done by keeping a quantity of the branches when burning up all the brush, and have them spread over the ground in spring, when it will soon be seen if beetles are there, and if they are, gather them during spring and autumn. Plant during the winter months, pit all the principals, i.e., the Hardwood and Scotch Firs, and slit the Larches, strew a quantity of fresh branches over the ground in the following spring, gather the beetles this year again, and there will be little fear of the plants being afterwards injured. I have planted Scotch Fir on ground which had been under a crop of Scotch Fir immediately after the trees were cut down and cleared away, and none of the plants were injured by beetles; but this plantation was under the management of an able forester, who always kept his woods in first-class order, and never allowed Scotch Fir branches to lie and rot on the ground. As a proof that the decaying branches of Scotch Fir trees are not only a harbour for, but the origin of beetles, I will give an instance. Six years ago I lifted as many Scotch Firs and Spruces, out of a plantation which required thinning for the first time, as was sufficient to plant an acre of ground for a screen; after these were lifted, I thinned the plantation, and in consequence of other estate improvements going on, there was not time to burn the branches, and they were left to rot on the ground. I never detected the slightest appearance of beetles in this plantation previous to the thinning nor after it till this spring, when I found many of the side branches had been attacked by the large beetle—*Hylobius abietis*. If the beetles had been on the trees previous to this thinning, those that were lifted would likely have had them too, but upon those there was not a beetle nor the trace of a beetle to be found. Therefore I advise all Scotch Fir rubbish to be gathered and burned up as a great means of getting rid of beetles.

Peat Fuel.—The Royal Dublin Society has appointed a committee to ascertain whether peat could be advantageously burnt in a Siemens's regenerative gas-furnace. The answer is favourable, and there is every reason to hope that the millions of acres of Irish bog will ere long be turned to good profit. The regenerative furnace can be applied to so many purposes in metallurgy and pottery-work, that there can be no question of failure of demand, if the fuel can only be produced in a fit state. It is in a furnace of this description that Mr. Siemens makes steel direct from the ore.

THE INDOOR GARDEN.

TAPINOTES CAROLINÆ.

THIS is one of the most beautiful of all stove flowering and foliage plants, and it deserves to be more generally cultivated than it is. It has also an interesting and melancholy history connected with it, having been discovered and named by the late Emperor Maximilian, an accomplished botanist, who, being struck by the beauty of the plant, named it in honour of his unfortunate consort the Empress Caroline. Its foliage is olive-green above, slightly hairy, and shining as if varnished, while below the leaves are vivid purple. It flowers nearly all the year round, and bears blossoms of snowy whiteness, not unlike those of a *Gloxinia* in shape, but with the mouth curved upwards. It grows very freely in an ordinary plant stove, and delights in a fresh open peaty compost and in a humid atmosphere. When not in flower it is highly ornamental on account of its foliage, which has a metallic lustre not found in any other Gesneraceous plant with which we are acquainted. B.

PREPARING POTTING SOIL.

THE first requisite for good cultivation is good soil. In many gardens manure, loam, &c., may be seen, each in separate heaps, to be afterwards mixed in various proportions. I think this is a mistake, manure decayed by itself is subject to great loss, and by the time it is reduced to a soil represents but a very small part of its original value. But this is not the only mistake. Soil mixed with decayed manure just before it is used is not at all what it might have been if properly prepared. Many young farmers in taking worn-out land have thought that by heavy dressings of manure and lime, they could immediately restore its fertility. What has been the result? Corn crops running to leaf in place of producing good samples of corn; Wheat mildewed, laid, and rotten, instead of stiff straw and heavy ears of golden grain. Experience has taught many of us that it takes six or seven years of good farming to restore worn-out land. Now, why is this? Because, to get the best results, we require the formation of chemical compounds between soil and manure. In the same way, if we require good potting-soil, it should be prepared for our plants. Say you require some rich soil preparing, to be afterwards mixed for use as may be necessary. Place a layer of good loam, say 6 inches thick, cover it with fresh manure out of the stable-yard to the same thickness, on this put another layer of soil, cover again with manure, and so on till your heap is finished. You will then have a heap of equal bulk of manure and soil. The manure will now decay without loss, it will combine with the soil, and make a rich heap of compost, which, after a few weeks, will be tender enough to be easily chopped down and mixed together, and may then remain any time till wanted. Such a compost, when mixed with a little fresh turfy loam, will be found very valuable for potting Vines, Geraniums, Fuchsias, &c., and is far the best way to use manure in all pot culture. J. W. PEARSON.

Chilwell.

RAPID POTTING.

THE statement made, not long since by Mr. Peter Henderson, of Jersey City, N.J., that one of his workmen had potted 10,000 plants in ten hours having been disputed by Mr. H. E. Chitty, of the Belle-vue Nurseries, Patterson, Mr. Henderson replies, as follows, in *The Gardener's Monthly*:—"In your September number, Mr. Chitty, says, in substance, that it is impossible that the number of Verbenas—10,000 in ten hours—which I stated as having been potted by one of my workman, James Markey, on the 8th of May last, could have been done well. They were done so well that nearly all were sold in four weeks from the time of potting, with a loss of less than one per cent. dead in the whole lot. As I stated before, Markey's average work is 5,000 per day—of some things he accomplishes more, of some things less; for instance, to-day, I find on examination, he has potted nearly 7,000 *Smilax* plants in $2\frac{1}{2}$ -inch pots; to-morrow, should he be potting Rose cuttings, he probably will not run over 3,000. Markey's work is nearly exclusively that of potting off cuttings, and has been so for the past three years. Mr. Chitty says that in potting off cuttings, it is necessary to make proper "disposition of the roots," which I suppose means that the roots require to be spread out. This we might grant if the propagator did not know enough, or was careless enough not to pot off his cuttings until the roots became so long that they needed spreading; but any propagator, that properly knows his business, will pot off as soon as roots are emitted, never letting them be longer than an inch when

possible. And in many soft-wooded plants, such as Geraniums, there is no necessity for waiting until the cutting is rooted at all, when well calloused they root just as quickly in the small pots."

THE CORAL ÆCHMEA.

(ÆCHMEA FULGENS.)

MANY Bromeliads are extremely elegant in habit, require but little attention to grow them in perfection, and form very effective decorative plants for the greenhouse, stove, or drawing-room. Some species are very hardy in constitution, and remarkably tenacious of life; indeed, they may be grown with less trouble than any other class of plants, if we except succulents. The plant, of which we now give an illustration, forms a striking object in a conservatory or drawing-room vase, especially when bearing clusters of coral-coloured purple-tipped flowers. The leaves are bright green, robust in character, and gracefully recurved. Its flower-spikes continue in perfection for several weeks at a time, and form conspicuous objects. Nearly all the Bromeliads grow vigorously in good sandy loam, to which a little leaf-mould may be added, and they should be liberally supplied, when growing, with water at the roots. A little clear manure-water, too, strengthens them in a marked degree, and assists them in



Æchmea fulgens.

producing strong flower-spikes. Bromeliads are easily propagated by taking the off-sets produced by the old flowering plants, and potting them at once in small pots, which may be plunged in a gentle bottom heat until well rooted, after which they may be encouraged to make good growth, and will generally produce flowers the second year; but, for decorative purposes, this plant is always handsome either in or out of bloom.

B.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Shading for a Fernery.—In my note in THE GARDEN (see page 355), "screen canvas" has been misprinted for "screen canvas."—T. BAINES.

Fuchsia corymbiflora.—This now apparently forgotten plant deserves to be again brought into notice; for, when planted in the bed of a conservatory, and well flowered, it has few equals in point of beauty. When grown as a standard, it occupies but little room, and if placed where its wood can get well ripened, it flowers in its proper season most profusely. It also makes a good pillar plant.—K.

Packing Camellia Flowers.—I have packed some thousands of these for market and otherwise, and adopted many different ways, the best of which I will endeavour to describe. Get large round Potatoes, cut them square, and pack them tightly at the bottom of the box; place over them two thin pieces of wood to keep them from moving. Cut the flowers, making the end of the branch on which they are set pointed, and stick them into the Potatoes firmly and thinly, let the box be, of course, deeper than the height of the leaves, so that the lid will not touch them; if cut when in bud, or not too full blown they will keep a week as fresh as when first cut.—R. GILBERT, *Burghley Gardens*.

THE FRUIT GARDEN.

NEW GRAPES.

MR. FOWLER, of Castle Kennedy, the celebrated Grape grower, speaks as follows of the new Grapes in the *Florist*:—

Of late years a very large number of new Grapes has been introduced, and brought prominently under the notice of horticulturists. Some of these varieties possess considerable merit, and consequently have found their way into general cultivation, but none of them to the extent of such old favourites as the Black Hamburgh or Muscat of Alexandria; still they have displaced and are displacing many of the old varieties which were in cultivation twenty or thirty years ago, such as West's St. Peter's, Sweet-water, and the Black, Grizzly, and White Frontignans, &c. Although we have not been able to introduce any new sorts likely to displace the two old favourite varieties named above, it must be admitted we are making very considerable progress, more, however, in improved appearance, including compactness and symmetry of bunch and size of berry than in superiority of flavour, for doubtless it will be difficult to surpass the old Frontignans in that respect. Many of the newer kinds possess some really valuable qualities, and are often, in many respects, decided improvements on older sorts; but it is somewhat unfortunate, though not the less true, that most, certainly not all of them, have some serious defect or defects, totally disqualifying them for general cultivation. What greatly adds to the difficulty of deciding which kinds are worthy, and which kinds are not worthy of general cultivation, is the want of uniformity in the development of the defects—in one place a variety being all that could be desired; in another with the conditions apparently similar, all but worthless. As the season is again coming round for selecting and planting Vines, the following remarks on some of the more recently introduced sorts may not be uninteresting:—

Golden Hamburgh.—I have frequently seen this variety grown from 5 lb to 6 lb weight, and finished in the best style, at Lochryan House, the residence of Sir Wm. Wallace, Bart., and grown on an aerated border. When thus grown, it is certainly one of our showiest, and one of our finest-flavoured Grapes; but it labours under the serious disadvantage of having a weak constitution, and unless grown under the most favourable conditions, is seldom seen in a good state. It has an additional defect, in that it does not hang well after becoming ripe. If this Grape had the constitution of a Trebbiano, it would be invaluable.

Foster's White Seedling.—A white Grape, which was introduced with a considerable flourish of trumpets some years ago. It possesses no small merit as an early forcer, and for pot-culture. When planted out in rich borders, however, it cracks at the junction with the foot-stalks, just before ripening. I have in consequence ceased to grow it.

Duchess of Buccleuch.—Perhaps the finest-flavoured of all Grapes, not yielding the palm to the old Frontignans, of which it is apparently a seedling. It is a strong-growing variety, with a good constitution, producing large bunches with small berries. It should be used soon after being cut, as the fruit soon becomes discoloured.

White Lady Downe's.—It very much resembles in all respects the Black Lady Downe's (except in the colour), of which it appears to be a seedling, and should be grown as a companion to that invaluable late Grape.

Madresfield Court Black Muscat.—This is one of the newer Grapes about which there is great variety of opinion, some lauding it highly, and others condemning it as worthless on account of its propensity to crack in the ripening process. When it does well, it is certainly a first-class Grape. The bunches are compact and medium-sized, the berries are large, and the flavour is very good. It does not hang very long after being ripe.

Gros Colman.—A fine-looking late Grape, of commanding appearance. The bunches are very symmetrical, of medium size, and very compact; the berries of the largest size, the colour jet-black, the bloom perfect. The constitution is strong, but the flavour is not fine till quite ripe, when it improves very much. Its principal merits are its keeping qualities and fine appearance.

Muscat Hamburgh.—Where it succeeds, this is one of the grandest of all Grapes, producing large bunches and large berries; I have grown and shown it upwards of 7 lbs. weight. Its flavour is exquisite, particularly when it is allowed to hang till it begins to shrivel. It appears to do best on a warm, aerated, or newly-formed border of turf, which is much the same as an artificially aerated border, the air penetrating freely to every part of it, and consequently increasing its temperature. When the border gets old and solid, it necessarily becomes colder, and the Muscat Hamburgh under this condition does not thrive so well on its own roots. It does best grafted on the Black Hamburgh. This season the berries were one-third larger on the grafted plants; but for a few years after the

borders were first formed, the bunches and berries were largest where grown on its own roots.

Mrs. Pince's Black Muscat.—This is another new Grape which has a good many admirers. When well grown, the bunches are large, and berries above medium-size, and when quite ripe a limited amount of Muscat flavour is observable. It has a robust constitution, hangs well, and will be useful as a late keeper. It has the defect of seldom colouring well, and takes a long time to ripen thoroughly, requiring fully as much heat as a Muscat of Alexandria to mature it—a serious drawback in these days of high-priced coal.

Muscat Champion.—A really useful variety, with stumpy bunches and large berries. The flavour is a fine strong Muscat; but its grizzly-brown colour is against it as regards appearance, and its constitution is not good.

Golden Champion.—A Grape which has an extraordinary combination of good points, but, unfortunately, it has one serious defect—its liability to spot when ripening, arising from its thin delicate skin. If it had not this fault, no Grape would stand higher amongst cultivators, or be more extensively grown. It has a fine constitution, the bunches are above medium size, the berries of the largest size, the flesh melting, the flavour, when quite ripe, exquisite, distinct from, if not superior to that of every other Grape. I almost escaped the spot this season, by keeping it in a drier atmosphere than usual during the period of ripening.

Duke of Buccleuch.—Equal in every respect to the Golden Champion, but without its fault. I have frequently had opportunities of seeing this fine Grape, both at the Tweedside Vineyard and elsewhere, and have no hesitation in placing it a long way in advance of any of the new Grapes I have met with.

The qualities we want most, and which we must look out for carefully in our new seedling Grapes, are:—Sound constitution, vigorous growth, compact moderate-sized bunches, with large berries, melting flesh, fine flavour, and free setters—avoiding all varieties that are liable to crack when ripening. A full crop of good fruit is what is wanted. Another grand desideratum is to secure kinds that will mature their fruit in as short a time as possible, enabling us to discard such varieties as Gros Guillaume, Mrs. Pince's Black Muscat, &c., which take nearly six months of the best part of the season thoroughly to ripen them, at an expense of nearly one-third more fuel and labour than suffices to mature some other varieties.

Branch Propagation of Apple Trees.—There is a variety of Apple grown in the north of Yorkshire, called the Burr Knot, or the Burnot. In fact there are two sorts—a large fruited free growing kind, and a small fruited kind with a stunted growth. The latter is not worth growing, I grow about eighteen trees of the large-fruited kind, they are planted a yard apart, so as to form two hedge-rows, they are bush trees with shoots issuing from the lower parts of the stem. They are excellent things where you want to form a warm corner in the garden, or as a breakwind in exposed situations. Cuttings from 2 or 3 feet in length take root at once, and carry a crop the following summer. The cuttings are sawn off in the manner described at page 334. Hedges for the inner garden made of this variety are both handsome, useful, and profitable. The blossom which is abundant every year, is very large, the fruit, too, is large, handsome, borne in abundance, sweet and juicy; the sunny side of the fruit is of a rich dark red or chestnut colour; the stalk is exceedingly short, seated in a deep depression. They are excellent for kitchen use, and I have kept them to the end of March. The foliage is likewise large, making a good cover. The new wood should be freely cut back in autumn in order to keep the bushes stiff and chubby. In short, this beautiful and useful variety of Apple ought to be better known.—HENRY TAYLOR, *Embsay, near Dalaby.*

Wiring Walls.—I am going to wire a wall that is being built along one side of my kitchen garden, and which will be about 6 feet high. How far from the ground should the bottom wire be, and how far apart should the rest of the wires be? The wall will be used for Peaches and Nectarines.—RAMALTO. [Mr. Stevenson, of Cobham Park, who has had some twenty years' experience of wired walls, recommends the studs, through which the wires pass, to be put into the wall, as it is built, from 3 to 4 feet apart. The first wire should be a foot from the ground, and the rest should run along alternate joints up to within 6 inches of the top of wall or coping. The wires should be put as close to the wall as the workmen can put them in order to save the branches from cold draughts. Galvanised wire (3-16ths) is the kind which is employed at Cobham.]

Canadian Apples.—Mr. Clayden, who accompanies Mr. Arch in his visit to Canada, writes:—"We have heard much of the splendid fruits of the Niagara region, but the half had not been told us. In one garden of, say one-quarter of an acre, we found Vine after Vine laden with what we should call in England the most delicious

hothouse Grapes. I never tasted such fruit in my life, and not a piece of glass in the garden! A few miles further on we came to an orchard. Entering it, we found tree after tree laden with splendid Peaches. Hundreds of bushels, the owner told us, he gathered every year; and, as for Apples, I thought I had seen some good Apples in Somersetshire; but these beat all that I had ever seen anywhere. One fine fellow that was given me I had the curiosity to measure, and found it just a foot in diameter." [We have seen a good deal of Canada, and much more favourable Apple regions in America than Canada, and can avow that an Apple a foot in diameter has not yet been seen. The Canadian Apples did not seem to us so good as those of Western New York or the foothills of the Sierras.]

THE PLANTING OF THE APPLE-TREE.

COME, let us plant the Apple-tree.
Cleave the tough greensward with the spade;
Wide let its hollow bed be made;
There gently lay the roots, and there
Sift the dark mould with kindly care
And press it o'er them tenderly,
As, round the sleeping infant's feet
We softly fold the cradle-sheet;
So plant we the Apple-tree.

What plant we in this Apple-tree?
Buds, which the breath of summer days
Shall lengthen into leafy sprays;
Boughs where the thrush, with mottled breast,
Shall haunt and sing and hide her nest;
We plant, upon the sunny lea,
A shadow for the noontide hour,
A shelter from the summer shower,
When we plant the Apple-tree.

What plant we in this Apple-tree?
Sweets for a hundred flowery springs
To lead the May-wind's restless wings,
When, from the orchard row, he pours
Its fragrance through our open doors;
A world of blossoms for the bee,
Flowers for the sick girl's silent room,
For the glad infant's prying bloom,
We plant in the Apple-tree.

What plant we in this Apple-tree?
Fruits that shall swell in sunny June,
And redden in the August noon,
And drop when gentle airs come by.
That fan the blue September sky,
While children come, with cries of glee,
And seek them where the fragrant grass
Betrays their bed to those who pass,
At the foot of the Apple-tree.

Each year shall give this Apple-tree
A broader flush of rosy bloom,
A deeper maze of verdurous gloom,
And loosen, when the frost-clouds lower,
The crisp brown leaves in thicker shower.
The years shall come and pass, but we
Shall hear no longer, where we lie,
The summer's songs, the autumn's sigh,
In the boughs of the Apple-tree.

—W. C. BRYANT.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Banana Crops.—As a crop it is acknowledged that no other plant will yield as much for man on an acre of ground as the Banana, or yield it with so little outlay of labour. Where the mean temperature is about 82° Fahr., the yield per acre is about 75 tons. Even when the mean temperature is as low as 75° or 76° its cultivation is still a lucrative one; a mean at five degrees gives a middling return, but when it sinks to 66° the product fails to be remunerative. Under most favourable circumstances a single tree will yield three crops in a year of 75 lbs. each.

Vineyards in Italy. The vineyard in Italy offers a more picturesque spectacle than in countries which lie further to the north, where the Vines are pruned down to mere bushes, fastened to poles, and range in stiff and formal rows. Such vineyards as these are not nearly so pretty as our Kentish Hop gardens. In Italy, however, the Vine is allowed to display its full luxuriance, it attaches itself to trees or espaliers, and when, as the time of vintage draws near, festoons of luxurious green and purple fruit hang from these leafy arcades, a most tempting sight is presented to those who walk beneath.

Dr. Hennicott's Fig.—At Oxford, in the botanic garden of the Regius Professor of Hebrew, is a Fig tree that was brought from the east and planted by Dr. Pocock in the year 1648. Of this tree the following anecdote is related:—Dr. Hennicott, the celebrated Hebrew scholar, and compiler of the Polyglot Bible, was passionately fond of this fruit; and seeing a very fine Fig on this tree which he wished to preserve, wrote on a label, "Dr. Hennicott's Fig," which he tied over the fruit. An Oxonian wag, who had observed the transaction, watched the fruit daily until it was quite ripe, and then gathering it, exchanged the label for one thus worded, "A Fig for Dr. Hennicott."

THE ARBORETUM.

A CURIOUS TREE.

SOME time since I was carelessly wandering through the extensive and fine park surrounding the Vale Royal Abbey, Cheshire, the seat of Lord Delamere, when I was struck with the appearance of what I at first mistook for an Alder bush from the fact that it was growing on a raised mound not far distant from the margin of what is locally known as Petty-pool, a large mere on the outskirts of the park. (All the lakes in Cheshire are called "meres," as Oakmere, Achmere, &c.) Upon closer inspection, however, I at once saw my mistake. It was a very old Hawthorn tree, which had, as I suspect, been many years ago struck with lightning, as the wrinkled and aged trunk was split from its summit to the base. The bark had again partially clothed the trunk on its inner surface; the tree still lives, and is apparently very healthy. It is well known to farmers that the Hawthorn is exceedingly tenacious of life. I know of no British indigenous tree which will thrive and do so well, after the most severe clipping and splitting of the branches and trunk, as the Hawthorn. It had the appearance as of two distinct trees, until the lower part of the trunk was examined, about a foot from the root, when it was at once perceived to be only one perfect tree; but the



Thorn with a Birch growing through its base.

strangest thing about it was the Birch tree which had found a home in the Hawthorn. Perhaps, soon after the Hawthorn had been rifted asunder, a little soil might have lodged at the base of the fissure, which would afford a sufficient nidus for the Birch seed to germinate. It is remarkable that the Birch could flourish under such unfavourable circumstances. Whether the Birch roots were growing beneath the bark of the Hawthorn, and thus reached the soil, I could not determine. My opinion is, they penetrated down the centre of the trunk to the soil, and, by this means, in time the Birch became an independent tree apart from the Hawthorn.

JAMES F. ROBINSON.

ON PLANTING CHOICE TREES.

WHEN planting is done on a large scale, and the young trees take their places by thousands at a time, they are treated without ceremony, and put into the ground as rapidly as possible. But when only a few valuable trees are to be planted, it is worth while to take pains to give them every chance of recovering rapidly from the effects of removal. The "good ball of earth," so generally recommended in horticultural books, cannot be had with trees packed for transmission, nor is that of any use further than to preserve in their places the fibrous roots within it. What is of real consequence is to secure as large a proportion of roots as can

be got up uninjured, and, when the tree is planted, to spread them out carefully and as nearly as possible in a horizontal direction. The method I pursue is as follows:—The ground is opened to the required depth and width, and with an iron bar a hole is made in the middle of the excavation for a stake, if the tree to be planted is a standard; but in any case a stick or support of some kind is fixed, and the tree fastened to it. If the excavation is found to be too deep, a little of the soil is put in before the tree is secured, and trampled, as the soil here is light. When the tree has been tied to its support, some earth, which has been kept rather dry for this purpose, is put in a little at a time, and the roots carefully spread out in the form they would naturally take, layer over layer, the highest being from 2 to 5 inches below the general level, according to the size of the tree. I never trample the surface of the mould, but allow it to subside of itself, and if the weather is dry and mild at the time of planting, water is given and allowed to percolate through the soil to the roots; and the operation is completed by the addition of a top-dressing of long stable manure. For trees of small size, for which ordinary stakes would be too heavy, laths, about 4 feet long, called "doubles," split down the middle, make very useful and inexpensive supports; and for still smaller trees, the common ceiling laths, with moderate skill, can be made into three pieces in the same way, and turned to good account. The sub-soil here is injurious to all kinds of fruit trees except perhaps the Vine, and in order to keep up a supply of fruit it is necessary either to have ready a succession of young healthy trees to take the place of those that are worn out, or else to pave the ground where the trees are to be planted, at a depth of from 18 inches to 2 feet. A very inexpensive and effectual mode of doing this is to get a quantity of cinder-ashes and spread them over the surface about two inches deep; then quicklime should be thrown over them in the proportion of about one of lime to five or six of cinders. The whole should then be well intermixed with a rake, leveled, and watered with a fine rose. Earth should then be carefully scattered over the concrete to about 5 inches in depth, and first gently beaten down and then well trampled. Over this the trees can at once be planted, and the borders finished off. For wall trees, a pavement so constructed should extend from the wall not less than 6 feet, and for espaliers there should be a square of concrete 6 feet every way, or a circle with a radius of 3 or 4 feet from the stem of the tree. Roots are easily got at when they extend horizontally beyond that distance, and can be pruned or lifted without injuring the tree. The supports for the trees must not be driven through the concrete; it will usually be found that, for any support the tree may require, resting on the top of the concrete will suffice; or, if not, two stakes driven just beyond the paving, with a horizontal bar between, will effectually hold the tree in its place till it has got firm root-hold. The object of putting above the concrete a thick layer of earth, and making it solid by beating and treading, is to prevent the concrete from adhering to the feet when the trees are planted. The beating and trampling must be done carefully, in order to keep the layer of concrete level and of equal thickness throughout. A pavement, constructed as here recommended, was taken up a few years ago and found to be as hard as solid brickwork.

B. S.

AUTUMNAL TINTS.

A good combination and arrangement of these almost makes one willing to exchange summer for autumn, and it strikes me that if some of your correspondents, with material and leisure at hand, would paint with their pens an autumnal picture of the garden, the shrubbery, and the forest, they could not bestow a greater boon to intending planters, who may not have had the advantage of their experience; for a good arrangement of autumnal tints, especially in sheltered places, is quite as beautiful to the eye, if not so pleasing to think of, as those of spring. If you will allow me to date these remarks back a week or so, I will try to paint the very circumscribed view from where I am now sitting. First of all, as it grows just before my window, I will take the Desfontainea, with its long fiery-looking tube flowers, after the loss of which it is through winter, to all intents and purposes, a little bushy green Holly, and near to it I may name the pretty little Fuchsia microphylla, with its numerous flowers, the Skimmia japonica, and the Pernettyas, with

their pretty coral and purple berries, the dark shining leaved Escallonia macrantha, still full of bloom, the lighter green of the upright-growing varieties of Lawson's Cypress, the different varieties of the green and variegated Euonymus, or Spindle-tree, and the exotic-looking Arundo and Pampas Grass, all as striking plants at this season. Beyond is the singular-looking Aralia japonica, with its fine large leaves, and I think I may say still larger heads of creamy-white feather-like flowers; near to it grows the tall and graceful Arundinaria falcata, still fresh and green, and the Magnolia tripetala, with its large foliage, the under leaves of dull red and brown, while the upper ones still bear their summer green; at a distance stands a noble Tulip-tree, with the silver-edged Holly and the dark green Portugal Laurel, &c., nestling underneath a canopy of large saddle-shaped golden-coloured foliage; near to them stands a dark green Holly, laden with yellow, and a gold-edged one, laden with scarlet berries. In the centre stands a deciduous Cypress, of a handsome conical shape, about 40 feet high, full of its pretty Fern-like foliage, but now as brown as the Brake on the hill-side, and rivaling the purple Beech beyond as to colour; at a little distance stands the Aspen Poplar, with its rather small but very rich gold-coloured tremulous leaves. These intermixed with their more sombre neighbours, Box, Yews, Rhododendrons, &c., &c., and the towering Lombardy Poplar and Leafless Ash beyond, form a most pleasing and striking contrast from where I now sit; and, by going outside, I have no doubt I could find many more equally pleasing objects.

CUMBRIAN.

The Kentucky Coffee Tree (*Gymnocladus canadensis*).

—This has many beautiful characteristics, and I always like to look upon it. Its naked unclothed branches, in the winter, are stiff and sturdy and strong—fitted to endure the strongest winds. It is rather late in the spring, and its foliage then lies in separate masses, each seeming a horizontal layer by itself. Belonging to the leguminous family, it has a leaf which resembles that of the Locust tree, with a more blueish-green tint. Its shade is not dense, like that of the Maples, and its whole aspect is light and airy, with a certain nobility of tone which makes my specimen, 50 feet high, a tree to be noted. Could I have but two trees on my lawn, the second should be the Kentucky Coffee tree.—J. B. P.

The Chinese Cypress.—My eye always turns with pleasure to the Chinese Cypress, known to botanists as *Glyptostrobus sinensis*. Of all pyramidal trees it is the most perfect in its form—straight as an arrow, compact in its habits, perfectly regular in its cone, and well defined in its outline. Its colour is unequalled by that of any other tree—a light pea-green of a most refreshing tint. Its leaves are like small twisted cords, delicate as the edging of a lady's collar, and in mass giving the appearance of green feathers. My specimen is 25 feet high, and I do not doubt it will reach 75 or 100 feet. Could I have but one tree near my house, that tree should be the Chinese Cypress. Although a Conifer it is deciduous, and were it possible to obtain large trees in quantity, it would be the very finest street tree known. There is no doubt that this tree is simply a peculiar form of the deciduous Cypress, as from its seed we raise that well-known ornamental tree.—J. B. PARSONS, *Flushing, U.S.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Hardiness of *Limonia trifoliata*.—Will any of your readers kindly inform me through the pages of THE GARDEN as to the amount of cold *Limonia trifoliata* will endure. A botanist informs me that it is hardy in Siberia.—J. B. PARSONS, *Flushing, U.S.*

Stakes. I wish to render some garden stakes durable—should I use petroleum or gas tar?—W. [Petroleum for the part above ground, and gas tar for all below. The former withstands the weather, the latter the water of the soil.]

Peat injurious to Rhododendrons.—I notice that cultivators in England are inclining to do without peat in growing Rhododendrons. We have given up peat here for the past twenty years. We consider it injurious in our dry climate.—J. B. P., *Long Island, U.S.*

How to have Fruit on Aucubas.—Aucubas are greatly improved in appearance when covered with scarlet berries, and I find that by planting a few of the male variety (*A. mascula*) amongst the female variety, which we have long had in our gardens, they set freely without artificial fertilisation. Last year I planted several of the new varieties in a new shrubbery here, and I find that all the female kinds are now covered with berries, although some of them are at a considerable distance from the male plants.—J. GROOM, *Henham Hall*.

A Graceful Mode of Growing Weeping Trees.—The new mode described in your columns (see p. 313), of growing weeping trees by budding near the ground and training up a leader leaving the laterals to take the weeping habit has been long our favourite mode of treating them at Flushing. In this way *Picea pectinata pendula*, and *Abies inverta* are very fine, and the Weeping Hemlock Spruce forms an evergreen fountain of great beauty. It is by far the finest of all weeping trees or if used for a carpet, it will never rise above the ground, but grow on it as closely as *Juniperus prostrata*.—J. B. PARSONS, *Flushing, U.S.*

THE VEGETATION OF THE GOLD COAST.

THE road, which is at the present moment being cut through the bush in the direction of Coomassie, has, for the first time, thoroughly revealed the true character of the trees and undergrowth of the intertropical forests of that part of Western Africa. Those pestilential jungles have hitherto been deemed impenetrable by Europeans, no practicable road, as we understand the word, ever having been made to traverse those primeval wilds which are at the present day precisely what they were in the long unrecorded ages of pre-historic times. But their supposed impenetrability by Europeans has just been satisfactorily disproved by the enterprise and energy of the English engineers, now under the command of Lieutenant Gordon, who have, with the aid of negro labourers, already succeeded in cutting a practicable road through these fastnesses, nearly thirty miles in length, in the direction of the Ashantee capital. In doing this the long hidden character of the interior of some of these forests and their jungles have become known to us. It has been found not to consist entirely of huge closely-grown timber trees, matted together by a dense thicket of intertwined undergrowth, as supposed, but, on the contrary, the big trees are generally at considerable distances apart, while those of smaller size, and the jungle or bush, are found to consist chiefly of soft-wooded growths, through which a pathway, wide enough for four men to march abreast, may be easily opened by the axe, with much less expenditure of labour than was anticipated. Tall, but soft-stalked Canes and Grapes form the mass of the undergrowth; nevertheless, these appear to be interspersed with thin-tough branches of an Evergreen shrub, resembling in character our garden *Laurustinus*; and now and again a large hard-wooded tree is encountered, which requires heavy work to fell and remove. There are frequently groves of the huge, but soft-hearted, Cotton-tree to be dealt with, at the cost of much time and exertion. The gigantic Grasses, after the rains, are often thickly intermixed with gorgeously-coloured flowers, shooting high among the great trees, Cotton and abundant Fan Palms, giving to some of the more open parts of the forest a novel and highly picturesque aspect; and were not our engineers and their assistants most fully engaged with the all-important duty of cutting the indispensable road to Coomassie we should, doubtless, ere this had several of them trying their hands at a few artistic sketches, or even elaborate pictures, of these regions, which, while they are so comparatively close to our own shores, have hitherto remained unseen, or nearly so, by European eyes, at all events in the densely wooded region between the English settlement at Sierra Leone and the inner land of the Ashantees and other negro tribes. In and about the region of the Gold Coast, there are also extensive groups of lofty Palms, which impart a grace and beauty to forest scenery that is peculiarly attractive to the eye of the artist. These occur abundantly along the banks of the Assini and Volta rivers, of the aspect of which the accompanying engraving conveys a very accurate idea. The numerous islands of the Volta are covered with extremely dense bush, but varied occasionally by groups of Palms towering above the jungle; and near the sea, where the salt and fresh waters mingle, their banks are bordered in the shallow water, by long and deep stretches of Mangrove trees. There is an outcry in many quarters, here at home, that we have no business in those pestilential regions, however beautiful or wealth-yielding they may be. But, as it is now becoming known how healthful this hitherto plague-stricken coast might be made by European skill, enterprise, and science, is not such advice equivalent to saying, "Let those grand regions of Western Africa remain a fever-haunted swamp and jungle, and let barbarism ever remain rampant there"? Would it not, on the other hand, be a far nobler policy to reclaim those millions of acres from their disease-breeding condition, and to plant the germs of future civilization among the native tribes of regions which European enterprise and perseverance may in a few years render as healthful as they are fruitful and beautiful? The soil of the forests, where recently cleared, is found to be the richest possible loam, and with the aid of clearing, draining, and the sowing of suitable crops, results beneficial to the whole human race would necessarily ensue. When the

planting of suitable crops and suitable trees is alluded to, one irresistibly calls to mind the beneficial effects produced by the spontaneous growth of the *Cinchona* in many of the swampy districts of the western coast of South America; and still more emphatically to the recent discoveries in regard to results to be obtained by the planting of the Australian *Eucalyptus globulus*, of which an interesting account will be found in another column. Of this great Gum tree a fine specimen was shown in the great exhibition of 1851.

With such possibilities in view, what a noble opportunity presents itself to an enterprising and watchful power, like England, to render the pestilential climate of the Gold Coast permanently healthy, instead of being allowed to remain absolutely steeped in poisonous miasma. By this means the door to commercial enterprise would be thrown open, and

irrigation established, the preservation of the valuable forests taken in hand by experienced horticulturists, the glories of the unrivalled vegetation investigated and classified by our botanists, while the length and breadth of the noble regions, hitherto little better than a wilderness without highways, are now traversed by those most wonderful promoters of civilisation—our iron roads and their steam locomotives; it is a proud thing to consider that all this is as much to the advantage of the 200 millions of our Indian subjects as it is to our own wealth and the development of our commerce. Suppose, in early days of difficulty, we had abandoned this vast region to its fate, would not such a course be now deemed a selfish and grovelling policy, and little short of a national disgrace? If, too, our first colonies in North America had been abandoned on the first barbarous onslaughts and scalplings of the savage Red Indians, the ague-stricken



River-side Vegetation on the Gold Coast.

civilization established where barbarism now reigns rampant; a far nobler policy would this be, than that of abandoning a region after being once occupied by our race, and leaving it to its barbarism and its agues, on the selfish ground of expense and inconvenience. It the more behoves us to endeavour to purify the climate of our African colony and the surrounding regions, seeing that we may thus secure, comparatively speaking, at our own doors, the luxury and profit of tropical products, such as we have hitherto brought, at vast outlay of time and money, from the analogous climates of the far east.

Let us consider for a moment the present condition of the vast regions under our dominion in India. The pestilential swamps of the Hooghly around our Anglo-Indian capital rendered all but perfectly healthy, while many other extensive districts have been similarly reclaimed. The most scientific methods of culture introduced, a grand system of periodical

swamps upon which healthy and magnificent cities are now standing might have remained for ages as they were, and the beautiful Peach orchards and productive American Apple harvests would have had no existence; nor would those gloriously abundant corn crops, which now supply Europe with a teeming supply of Maize and Wheat, have ever been created by the tillage of European hands. No, we must not leave glorious lands to their fate because barbarism is difficult to deal with, or because they require both skill and vast outlay, and great sacrifices at our hands. Our horticulturists and agriculturists require every year new fields for their fast-extending industry, and for the providing the rapidly-increasing demand for human food and human luxury; and it may be said that those are the most effective and valuable civilisers who make two blades of Grass to grow where only one grew before.

H. N. H.

Fine soils, being much firmer than coarse ones, present a better surface for the roots to attach themselves. The presence of considerable quantities of loose stones or flints in the latter often has a beneficial effect in rendering them more solid, preventing the roots being thrown out by frost, sheltering the young plant, and shading the ground from the drying effects of a hot sun. The custom of picking off all stones from the surface is often a great error, as they exercise a beneficial influence, and in many cases would in time disintegrate and deepen the soil. Of course they must be removed where so large as to interfere with cultivation; but the benefit is very doubtful in other cases. The presence of stones scours the plough, as it is termed—that is, keeps the share and turnfurrow clean.

Colour may be regarded as a physical character of soils, and may be noticed as appearing to exercise a marked influence upon fertility, due in a great measure to its affecting the temperature. Pedestrians are well aware of the difference felt in a very hot sunshine in walking over a white or dark soil. In the first case the rays are reflected, and strike upon the body with uncomfortable force; in the second they are absorbed, and the ground, or rather air, appears cool and refreshing. The darker a soil the greater its absorbing power; but, to compensate in some measure for this, the light-coloured soil retains heat longest.

Chemical Characters, with General Account of the Results of Analyses hitherto made.

By the term chemical character of a soil, we refer to the presence or absence of those ingredients with which the science of chemistry has made us acquainted. The ashes of plants are made up of a number of mineral substances, varying in different kinds, but always identical in the same species; and as these matters must be derived from the soil, we should expect to find fertile soils abounding in, and barren soils destitute of them. This, however, is not always the case: of course fertile soils must possess them, but infertile also often exhibit abundance of such food, and therefore we believe their value may depend more upon the particular state of combination in which they exist, than merely their presence or absence in a soil. Chemical analysis often fails to detect substances, which may yet exist in sufficient quantity for vegetable life; or again, for some slight impurity in the re-agents, it may indicate bodies, that are absent from the soil. Owing to these difficulties, the science of chemistry has not produced those results which were naturally expected. Little reliance can therefore be placed upon the mere tabular results of an analysis, the object of which is to point out the relative quantities of the different mineral matters in a soil without reference to their state of combination. We do not wish to infer that no value is to be attached to the ordinary analyses of soils, but would only point out their liability to error. Fertile soils contain the following substances: silica, alumina, peroxide of iron, lime, magnesia, potash, soda, sulphuric, phosphoric, and carbonic acids, and chlorine. With the exception of alumina, all these exist in the ashes of plants, being built up in the vegetable system, in union with organic matter; we shall therefore consider each shortly.

Silica.

This is an oxide of the element silicon, possessing slightly acid properties. It occurs pure in quartz crystals and many sandstones, forming the principal ingredient of all sandy soils, and being insoluble and destitute of all valuable physical properties, their poverty bears an exact ratio to purity. It is in combination with various bases, such as alumina, magnesia, lime, and the alkalies, that silica becomes an important element in soils. The straw of cereal crops contains a large quantity, giving strength and hardness. When Wheat is too frequently repeated on a poor soil, the straw becomes weak, and goes down before the Corn is ripe, because sufficient available silica is not to be had. The silicates are generally insoluble, and it is probably by their decomposition in the soil, that the silica, soluble in its nascent state, is taken up by the moisture present in the soil, and presented to the roots of plants. We say this is probable, because we can effect similar changes in the laboratory; but we should always remember that there are many counteracting influences in the soil, which may interfere with the result. In the most fertile soils we find the largest amount of silicates united with alkaline bodies, in which form it is most readily decomposed. Lime is supposed to possess the property of setting silica free; whether this action is confined to quicklime only is still undecided. Chemistry here teaches the reason for rotation of crops, which practice had found necessary; the Wheat crop, which takes most silica, is seldom taken above once in four years on poor land, and we precede and follow it with crops which remove very small quantities of this important substance. Silicates exist more abundantly in clays than in most sandy soils, consequently we find the Wheat crop more frequently repeated: Wheat after the Fallow, is followed by Beans, succeeded by Wheat again; a rotation which would be impossible on sandy soils. Of

course this difference is not to be traced to the silica only; many other substances are equally required, but none are more important.

Alumina.

Alumina is an oxide of the metal aluminium, possessing basic properties; it occurs abundantly in nature, forming, in a crystallised state, many of the precious stones; but its principal form is common clay, which is a silicate of alumina. It is not known to enter into the composition of plants, yet it must be regarded as the most important constituent of soils; partly due to its physical properties, and partly to the extraordinary affinity it manifests for gaseous substances, especially ammonia and carbonic acid gas. Pure clay like pure sand would form a barren soil; fortunately such do not exist in nature—clay being accompanied by various other substances, the relative proportions and combinations of which determine the fertility of each particular soil. Clay forms a matrix in which all other substances act; it is a storehouse, in which are collected and brought into contact those bodies which possess an affinity for each other's society: having united together, they are taken care of until required, when they are slowly produced. Silicate of alumina unites with silicates of other earths and alkalies, forming what are called double silicates—substances which appear to play a most important part in the nutrition of plants.

Lime.

Lime is also very abundant in nature, being found in all fertile soils: indeed, as it enters into the composition of every kind of plant, we may safely conclude that it is necessary to vegetation. It is an oxide of the metal calcium, possessing basic properties; having a great affinity for moisture and carbonic acid, on exposure to the atmosphere it rapidly becomes a hydrate, and finally carbonate of lime, in which state it principally exists in soils, though it is also found as sulphate and phosphate. From the earliest times lime either as carbonate or oxide has formed an important dressing for all kinds of land: whenever new land is brought into cultivation, or old pasture broken up, quicklime should be applied, whether the soil be stiff clay or light sand. We are better acquainted with the action of quicklime than of the carbonate, owing to its having engaged more attention from the chemist; but it is reasonable to suppose that the action is similar in both cases, only much more rapid and effective in the former, and therefore its application is to be preferred. As much less is required, the expense of burning is compensated by the saving in labour. Much difference of opinion still exists as to the action of lime; some chemists would limit its effects to vegetable matter only, others confine its action to the decomposition of mineral matters, while a third class look upon it principally as a manuring substance. We believe its value is due to all three causes. That lime has a most beneficial effect on inert vegetable matter is clear, from the advantages which follow its application to peaty soils; that inert vegetable matter exists in soils that have been long in cultivation and frequently manured is most certain; and that lime would in such cases prove as fertilising as a dressing of manure seems reasonable to conclude: but of course, as its effect is destructive, and in this sense dependent upon the presence of vegetable matter, it can never be substituted for manure. Its action consists in reducing to an available form those substances which have not been already absorbed by plants on account of their insoluble condition. This, it is now generally believed, is effected by the gradual reduction of the humus into its ultimate products, carbonic acid and water, and possibly ammonia or nitric acid; the nitrogen of the atmosphere uniting with the hydrogen set free in its nascent state. During this process it is probable that various organic acids are formed; passing rapidly one into another, without entering into plants as such. Lime removes the acidity often found in vegetable soils, either by destroying the acid, or combining with it to form an organic salt. Were the action of lime restricted to vegetable matter only, it could not fail to prove a most valuable application; but its relation to the mineral matters in the soil is perhaps more important still. In most stiff soils the alkalies are found united with silica and alumina, in certain proportions, mostly insoluble and, therefore, useless. Rain-water, containing acid, might gradually dissolve out portions, sufficient for a natural condition, but inadequate to the artificial requirements of cultivation. Lime appears to possess the power of setting free the alkalies and magnesia from their insoluble condition, probably replacing them; and, what seems rather extraordinary is, that when these substances are added to the soil and would pass away too rapidly and be lost, by some means not yet clearly understood lime possesses the property of fixing them as insoluble compounds, causing their union with those very substances from which it had previously displaced them. Any attempt at explanation of these remarkable changes would be out of place here; but should the present discoveries be confirmed by further investigation, a most important fact must follow, viz., the advantage of repeated applications of small quantities of lime, and the wastefulness of the old system of heavy dressings. Lime enters into the composition of

most crops, but the quantity required for this purpose is so small, and the natural supply in most soils so abundant, that we can hardly attribute the effects of its application to this cause. From all these facts, we should expect to find limestone soils a very fertile class, and when the other essential elements of fertility are present, such is the case. We are not certain that lime as carbonate acts in the same manner as in the caustic state; that its application to soils light and heavy, mineral and peaty, has been found beneficial is undoubted. Its influence may partly be ascribed to physical causes, making stiff clays more workable, sands more absorbent, and giving firmness to peaty soils.

Iron.

This is an important ingredient of soils, and is found in most crops. It generally exists as peroxide, giving a red appearance. The protoxide appears to exert an injurious influence on vegetation; it is found in the sub-soils of stiff undrained clays, giving the yellow tinge. On exposure to the atmosphere it absorbs oxygen, becoming peroxide. When such sub-soils have been brought to the surface too suddenly, great injury has resulted, which is generally attributed to the protoxide of iron.

Phosphoric Acid.

Phosphoric acid is a most important ingredient of soils, and its application when deficient has been most successful. It is a compound of oxygen with the metal phosphorus; it occurs united with various bases, as lime, magnesia, potash, soda, &c.; such combinations being known as phosphates. Phosphate of lime, the most common form, causes the high manuring properties of bones. In this state it is insoluble, but when the bones are digested in sulphuric acid, a chemical change takes place, and the resulting superphosphate, as it is called, contains a considerable quantity of soluble phosphate; hence its action is more rapid than simple bones; the latter are more lasting, and were formerly applied with the greatest advantage to worn out pastures. In this way the extensive dairy districts of Cheshire have been improved. For ages before, the milk (which contains a large percentage of bone earth) and the young stock sold off, had abstracted all the phosphates from the soil, and the pastures were yearly becoming more exhausted. There have recently been discovered certain soils on the upper greensand, very rich in phosphates derived from the decomposition of coprolites or fossil manure, and their fertility is very remarkable. The bed from which they are derived is quarried, and forms a valuable manure.

Sulphuric Acid.

Sulphuric acid is also found in the ashes of plants, and, united with various bases, exists in most soils. It has been found very beneficial when united with lime, as a top dressing for Clover, especially on sandy soils.

Magnesia.

Magnesia is the oxide of magnesium, possessing basic properties, and closely resembling lime in its nature. It occurs in most soils; all limestone rocks contain more or less as carbonate; sandy soils are most deficient, and its application to such in the form of sulphate (Epsom salts) has been found successful. The magnesian limestone consists of nearly equal parts of carbonate of magnesia and lime; many fertile soils are found resting on it, which seems to refute the prevalent opinion of its poisonous tendency.

Potash and Soda.

These alkalis may be considered together, as they possess similar properties, and it is even believed that they are in certain cases capable of replacing each other in the cells of a plant. They are oxides of metallic bodies, potassium and sodium, and occur in the soil as salts, united with carbonic, silicic, sulphuric, phosphoric, or hydrochloric acids. The percentage of each found in plants is very small, yet their presence in the soil is most important; all plants contain them. The fertile nature of wood-ashes is due to carbonate of potassa; sea weeds owe their manuring effects principally to the alkalis; clay soils are rich in alkalis, often occurring as silicates in an insoluble form, but in such a condition as to become slowly available for vegetation; limestone soils, at least the poorer varieties, are deficient in these substances, consequently their frequent application in small quantities is desirable; they should be applied as a top dressing in spring, so that the roots may take them up before they pass away into the sub-soil; guano and all other animal manures owe a portion of their effect to the alkalis present in them. The power of substitution supposed to exist in certain plants, has not been very clearly proved; it is said that sea-side plants which contain a large percentage of soda when grown inland, and upon soils rich in potash, have the power of absorbing the latter, and *vice versa*, but further experiments are required to determine this interesting question, which is of great practical importance, inasmuch as soda in the form of chloride exists much more abundantly in nature than any salt of potassa, and could, therefore, be applied much more economically.

Chlorine.

This is the last mineral constituent of soils we shall men-

tion. It occurs in most plants, and, where deficient in the soil, should be added in the form of common salt. The application of this substance has much increased of late years, and the successful results obtained would warrant our believing, that besides its food value, common salt may possess some peculiar chemical power in assisting to make other matters available as food for plants.

The assimilation of the above mineral matters by the vegetable kingdom appears to depend upon the presence in suitable proportions of the organic elements, carbon, hydrogen, oxygen, and nitrogen. The three first are very abundant, and can be obtained both by the roots and leaves of plants; the nitrogen occurs more sparingly, and fertility appears to depend mainly upon its presence in the soil. Small quantities existing in the atmosphere as ammonia and nitric acid are carried down into the soil with every shower, or absorbed by the surface soil. This property of absorption is enjoyed in a different degree by different soils.

(To be continued.)

THE LIBRARY.

A HANDBOOK OF WEATHER FOLK LORE.*

THIS is a most interesting collection of proverbial sayings in various languages relating to the weather, with explanatory and illustrative notes. The proverbs of several European countries on this subject have been carefully gathered and arranged with some care under certain headings, as for instance the various local general proverbial observations on the chances of good and bad seasons, founded on the experience of noting atmospheric and other phenomena. Many of these are exceedingly pithy and expressed with a pleasingly simple briefness. In the second part of the work is a long list of weather prognostics derived from the conduct of animals, birds, &c., prior to changes for foul or fair. One of the most remarkable features of this subject is the agreement of the deductions of all the European authorities cited in these matters. Many of the canons are necessarily rudely expressed, but the marked concordance of the conclusions of men of different times and countries on the subject of this self-taught weather-wisdom is as noticeable, as we believe it to be valuable, as a testimony to its truth. As an example of the agreement of these observations in different countries we may cite the following (p. 230):—"Cats are observed to scratch the wall or a post before wind, and to wash their faces before a thaw; they sit with their backs to the fire before snow." The French express the same feline perception of a change in the weather by the proverb—

Quand le chat se frotte l'oreille,
C'est le temps vif qui se réveille.

And the Italians, in almost the same words,—

Quand el gat se frega i orece
Speta l'acqua che vegn a sece.—*Milan.*

i.e., when the cat scratches his ear it will soon rain.

"When cats wipe their jaws with their feet, it is a sign of rain," is paralleled by a saying common in the Basses Alpes—

Quand lou cat passe la patte sur la teste,
Benléon (bientôt) fara tempeste.

In "Southey's Travels in Spain," we read, "The old woman promised him a fine day to-morrow, because the cat's skin looked bright." "Sailors," I am informed, on the authority of a naval officer, "have a great dislike to see the cat, on board ship, unusually playful and frolicsome; such an event, they consider, prognosticates a storm; and they have a saying, on these occasions, that 'the cat has a gale of wind in her tail.'"—*Brand*, iii., 188.

Coincidences of this kind are multiplied from the proverbial lore of almost every country in Europe, and render the work perhaps the most interesting that has yet appeared on the subject.

THE FOURTH GEORGIC OF VIRGIL.†

This is an exquisite little volume, finely illustrated with wood cuts from Rich's "Antiquities." The translation is, for the most part, good, and as near to the original text as the necessities of the English heroic couplet permitted. The book is so beautifully printed and bound that it would be difficult for us to think of or suggest a more acceptable gem of a present to any of our classical, or non-classical, friends.

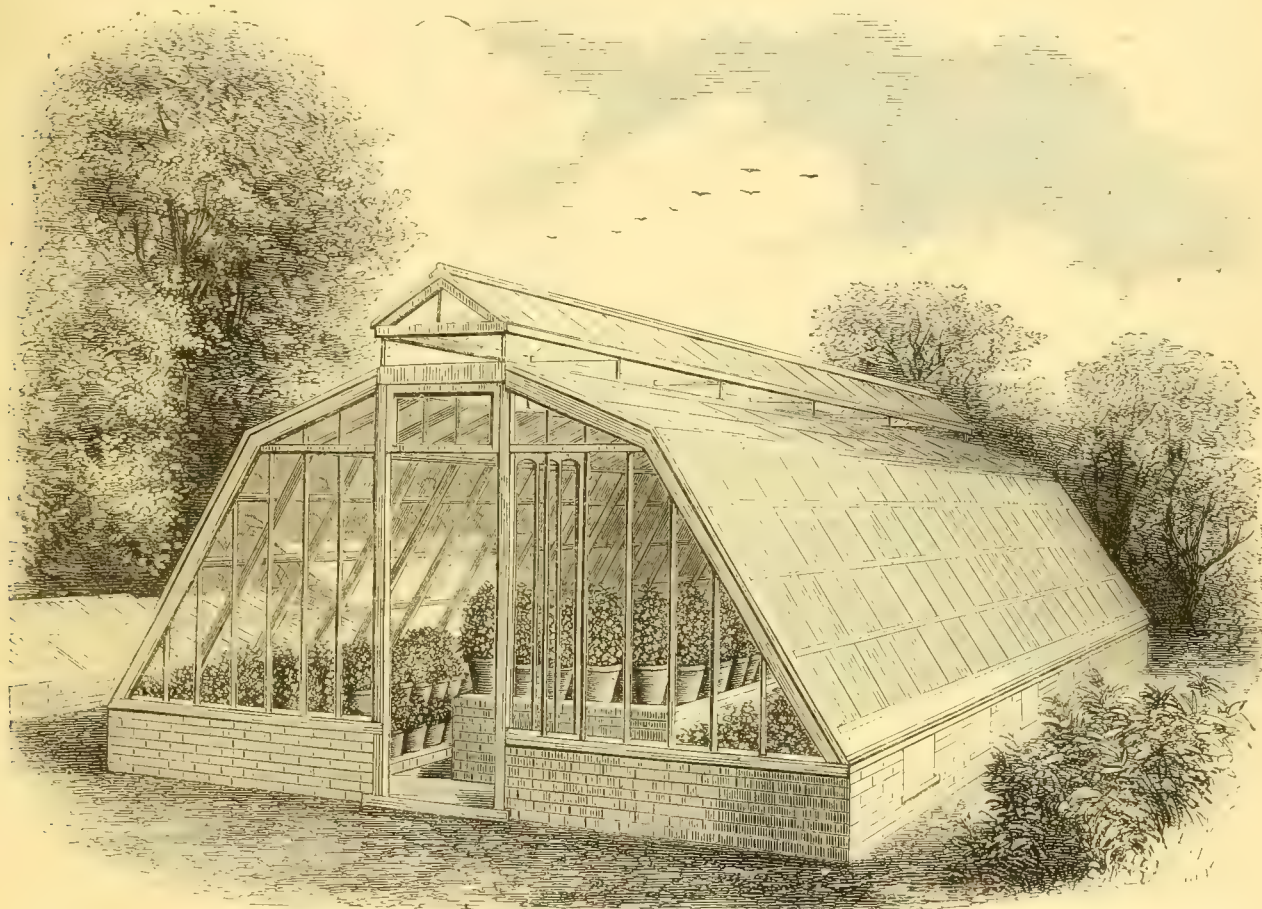
* "A Handbook of Weather Folk Lore." By the Rev. C. Swainson, M.A., vicar of High Hurst Wood. William Blackwood & Sons, Edinburgh and London. 1873.

† "The Fourth Georgic of Virgil." Translated into English heroics by R. M. Milington, M.A. London: Longman & Co., Paternoster Row.

MESSRS. JACKMANS' NURSERIES, WOKING.

THESE consist of 80 acres of ground filled with fruit, forest, and ornamental trees and shrubs, Clematises, Roses, and other hardy plants. They are, for the most part, high-lying and fully exposed, a situation in which plants ripen their wood much earlier than they do in valleys, and, consequently, they stand the winter better than those having a greater amount of shelter. Conifers thrive remarkably well in these nurseries, in which there are some noble specimens. Of *Araucaria imbricata* there is a fine tree some 26 feet high, with a trunk a foot in diameter, and it is densely furnished with branches to the ground. Of *Thuja gigantea* there is also a magnificent specimen about 24 feet high, and 9 feet in diameter of branches, which are almost as wide at the top of the tree as they are near the bottom, and as closely set as it is possible for them to be. Here, too, are some very fine symmetrical

and also a very fine example of *Picea cephalonica*, possessing the true character of a tree, and not that of a leaderless bush, a form so often assumed by this plant. Among other fine trees is a flourishing plant of *Thuja Lobbii*, some 35 feet in height; and of the deciduous Cypress, there are some good specimens both of the erect and weeping kinds. Inter-mixed with the branches of one of these trees is a *Wistaria*, which flowers remarkably well in this situation, and has a fine effect in spring, backed up, as it is, with branches having a lovely shade of green. A seedling variety of this Cypress has been raised here, apparently an improvement on the original; it has larger and broader leaflets, which are more flatly set and spread out than those of the original form. The grounds here, from their exposed position, are so subject to heavy gales that it has been found necessary to adopt measures to break their force; belts of *Pinus austriaca* have therefore



New House for Clematises in Messrs. Jackmans' Nursery.

specimens of *Wellingtonia*, especially one, the stem of which at 3 feet from the ground is 2 feet in diameter, and thickly furnished with branches to the very base. This and other *Wellingtonias* here are from seeds sown in the Woking Nurseries eighteen years ago. This tree has not been transplanted. Occasional transplantation is found to make good plants with plenty of short roots; but it also, at the same time, retards growth as compared with trees that have been allowed to grow on undisturbed. *Wellingtonias* should evidently be planted, while young, where they are to remain, and should not afterwards be moved. *Picea Nordmanniana*, a fine plant of which stands on the lawn, is about 16 feet high, with a diameter of branches at the base of about 8 feet. There is also a very fine specimen of *Pinus macrocarpa*, with wide-spreading branches. This has ripened cones here quite as fine as some in Messrs Jackmans' possession from California. Of *Pinus Lambertiana* we noticed a splendid specimen,

been planted through the nurseries, and these have now attained large proportions, with thickly-set strong branches that answer their appointed purpose even beyond expectation. This Pine withstands wind force with impunity, and it is a rapid grower and very hardy. Amongst the many acres of young Conifers that occupy patches here and there in the localities best suited for them, we observed the beautiful little *Thuja occidentalis lutea*, that received a first-class certificate from the Royal Horticultural Society last February. It was growing in rows in an open quarter associated with other dwarf *Thujas*, which it completely eclipsed in richness of colour and variegation, the young wood being largely blotched with a deep golden colour that stands the test of both the summer's sun and the winter's storm. Near it was also growing the silvery-edged variety of this *Thuja*, a useful acquisition to our stock of variegated Conifers. Of *Thuja orientalis elegantissima* there were several squares

filled with plants which possess a bright green colour, variegated with gold in summer, and as winter approaches the green becomes converted into a bronzy hue, and the rich variegation is still retained. By gas-light these little Conifers have a charming effect, and in spring they again resume their former green colour. *Retinospora ericoides* is grown here in large quantities, and, while young, we know of no prettier object for window embellishment; a purpose for which all *Retinosporas* are useful. Amongst many other treasures here, we also observed a form of the Deodar that had partaken of a character somewhat after the style of *Abies clauseniana* or *pygmaea*. It is an old plant 2 feet high and 3 feet through, in the form of an extremely dense weeping bush. It has no leader, nor does it attempt to make one; on the contrary, it annually pushes forth some little slender branches that, instead of adopting an upward direction, droop, and closely overlap the older ones. Yews are conspicuous objects in these nurseries, and thrive well in them. They consist of the English and Irish sorts, surmounted with grafted tops of the golden varieties, as well as the common and finer kinds on their own roots. In addition to some fine hedges of English Yew, was a dwarf edging like that of Box made of this plant, about 8 inches high, and which was both singular in appearance and pretty.

These nurseries are remarkable for their fine Hollies, which are worth seeing, a large space being devoted to their growth. Standard Hollies are also grown here extensively, and with great success. They have round and very thickly-set heads, and long stems as straight as gun-barrels. On the lawn are two standards that took the first prize at the great Exhibition of 1866, and beautiful plants they are, with compact densely-furnished heads of golden-variegated leaves. The largest is 12 feet in height, with a stem about 5½ feet in height, and a massive head some 9 feet through. The variety is *Ilex Watereriana*, which is the best of all the Hollies for standards; it forms a compact dense head, and is finely variegated, but not quite so much so as Golden Queen, which is a splendid sort for bushes. Near these standards is a bush specimen of *I. Watereriana*, 12 feet high and 51 feet in circumference. It was planted sixty years ago, and forms a blunt pyramid at the top, the base having the appearance of a dense mass of young plants, an aspect caused by the lower branches resting on the ground and turning up their points. A very fine Holly hedge borders one of the nurseries. It is planted on the top of a bank, nicely trimmed, and at intervals occur variegated heads, rising up in the form of standards. In the front of the bank, supporting this hedge, Quick has been planted, which, when timely and neatly pruned, forms a serviceable breastwork, both as a fence and as a protection for preserving the embankment intact.

About five acres of ground are under Rose-culture, and here the finest kinds of Roses of all classes are grown. Amongst forest trees, are large quantities of Spanish Chestnuts, which make good Hop-poles, a purpose for which they are more in demand than any other kind of tree, Larch and Ash ranking next in point of value. Amongst miscellaneous plants we observed a row of *Dracæna australis*, that four years ago were turned out of 60-sized pots to take their chance out of doors; here they have remained ever since, on an open quarter quite unprotected, and yet there is not a blank amongst them. They are fifty in number, strong, healthy, and about 3 feet in height. Surely when these graceful plants have survived four successive winters in such an exposed situation as these occupy, they might be used in flower-gardens to a greater extent than they are. Here, too, is quite a small field of Pampas Grass, bearing many hundreds of flower-spikes.

Our illustration represents Messrs. Jackmans' specimen Clematis house, which was erected during the current year by Mr. Rendle. It is 50 feet long and 20 feet wide, set on a dwarf wall of bricks, in which are wooden ventilators, and the top is ventilated on Voice's patent system, which is greatly approved of, as the whole length of the lantern top can be opened at once. If the wind blows from one direction, the ventilators on the opposite side can be opened, and *vice versa*; and in bright and calm weather, the lantern can be lifted up on both sides, if desired. This house is glazed on Mr. Rendle's principle, and is waterproof. At the time of our visit,

rain fell very heavily without causing the least drip in the house. The glass (21-ounce) consists of large panes placed in horizontal metal grooves fixed on wooden rafters, across which wooden battens, about 2 inches by 1 inch in thickness, run from end to end, and metallic bars are nailed to the battens to hold all firmly together. The panes are so inserted as to be conveniently taken out, and put in without the least trouble; indeed, this is the way in which additional ventilation is given, and should any shifting of the glass by wind be apparent the intervention of a thin piece of cork or indiarubber makes all perfectly secure. The interior contains a central bench, surrounded by side stages, which are filled with about 200 specimen plants of Clematises in pots. These are now kept at a low temperature, and moderately dry, a course of treatment which is continued until they are required for starting in spring, when they receive a little extra heat. These plants chiefly consist of the early-blooming varieties, and include many fine unnamed seedlings that were flowered for the first time out of doors last summer, and which were selected from amongst hundreds of others, potted and taken indoors. The pots they are grown in were made purposely for them, and are 12 inches wide at the top (inside measurement), and 15 inches deep, tapering but very little from top to bottom. These pots are preferred to those of ordinary make as they allow of a good depth of soil for the fleshy roots to ramble in. A good calcareous loam, mixed with well-decayed manure, is the favourite soil for Clematises in pots. Stout galvanised wire, ¾-inch in circumference, is converted into a pyramidal trellis of eight ribs, the wires crossing each other at the top where they are fastened together, and the ends are inserted in the soil in the pots. Clematises constitute the main feature of these nurseries, in which there are at present, in large 60-sized pots, at least 50,000 plunged in rows, and occupying a space of two acres, out of doors. Of specimen plants, too, there are many in addition to those now in the house represented in our illustration. The large specimens, which are in wooden tubs, made by sawing paraffin casks in two, cleaning and painting them and boring them for drainage, are now out of doors in a well-sheltered situation. There are also large patches of ground planted with Clematises in an ornamental style, and they are particularly useful in this way for covering piles of tree-roots, or trailing over rock-work. The hybrids of *C. Jackmanii*, *lanuginosa*, *viticella*, &c., are likewise grown here, on poles as well as trained in festoons along galvanised chains stretched loosely from pole to pole. Clematises are also used for bedding purposes on the massing principle; they produce dense masses of bloom in summer, and, being hardy, they require only a slight mulching in winter; beds of *C. Flammula* are now ripening seed, which will be sown in spring to produce stocks on which to graft the hybrid varieties. Plants from three to four years old are preferred for "working" on, and pieces of the fleshy roots are the portions chosen on which to insert the scions. Grafting is performed indoors in close pits in spring, and, as soon as the scions begin to grow, the plants are shifted into 60-sized pots in which they remain till they are sold. Packing for exportation is done as follows: Good healthy plants are selected and turned out of their pots; all loose soil and corks are shaken away, and the balls are wrapped up in some dry Moss. Thus prepared, they are then placed in layers in a large deal box, and between every layer of plants is a layer of dry Moss, which keeps all firm and dry, and prevents fermentation. The boxes, when filled, are nailed down and hooped round with iron. In this way, sometimes 500 plants are packed in one box, but Messrs. Jackman have just tried, by way of experiment, packing the plants with the soil entirely shaken from their roots, and, if this answers, 1,500 plants may be put into a box instead of one-third of that number.

At Niederplanitz, near Zwickau, in Saxony, a vast bed of coal has been burning for over 300 years. The ground above this subterranean bed of fire has become thoroughly warmed by this time, and an ingenious gardener has utilised it by planting upon it a large nursery garden. Here he raises tropical plants of all kinds, with exotic fruits, which flourish with a vigour and luxuriance in the open air that the best forcing-houses could not ensure.

GARDEN STRUCTURES.

ROLLED PLATE GLASS.

As one who, for nearly a quarter of a century, has used this glass, I must dissent from Mr. Baines's estimate of it, at least as respects Hartley's patent rolled plate. I have used this and no other, and with much of it in active service I have not a single complaint of scorching; but I have of the shade afforded by it not being quite sufficient. Mr. Wills found this to be the case, and applied a little extra shade; and yet I will venture to assert that there is not a collection of plants in the country in better health and colour than that under his rolled plate. Facts like these speak, not only for themselves, but for the glass under which they have been grown. The idea that patent rolled plate of good quality does not admit the same amount of light as clear glass has no foundation in fact. Herschel admitted that, and also other equally able observers. I grant there is not the glare that is experienced under clear glass, the rays being broken up and diffused, but if it could be guaged, I feel certain that more light is admitted through the roof of a house glazed with rolled plate than any roof Mr. Baines has or ever had. I do not speak on this subject as a theorist. Twenty years ago I adopted it on an extensive scale near Llandilo, in South Wales, and though both rough and sheet glass were used there, I have the authority of several experts in Grape growing for asserting that the finest foliage and best-coloured Grapes were invariably under the rough plate. There was a great outcry about the injurious properties of rolled plate at Raby, and in some of the houses there it has been taken out; but meeting Mr. Westcott at the International Show at Manchester this year, he assured me that his best-coloured Grapes were under the rolled plate. In the *Florist* for November, I see that Mr. Gilbert moots the question under the head of "Vinery Glazing," and after stating the sizes of glass used in the various ranges at Burghley, says:—"I draw my conclusions from five years' experience here, that small squares of glass are the best, and if I had any quantity of glass to put in, 8 inches by 6 or 7 inches would be the size for me." Singularly in the preceding paragraph, after speaking of the scalding qualities of 27 inches by 21 inches, and 16 inches by 9 inches, he remarks—"The next and last range is certainly the best. The squares are 24 inches by 10 inches. One of them has a light ribbed glass (Hartley's small fluted), which succeeds perfectly. In the other the ribs are more numerous, but it is not so good in many ways." These are rather contradictory conclusions. One fact, however, I may give Mr. Gilbert to ponder over, and that is that the best swelled and finished Queen and Cayenne Pines I have ever seen were grown in a Vinery, fully 10 feet from the glass, and that was Hartley's rolled plate, no special attention being devoted to them. WILLIAM P. AYRES.

[As much diversity of opinion exists on this subject, we should be glad to receive communications from any of our correspondents who have had experience in the matter.]

ECONOMY OF HEAT IN HORTICULTURAL BUILDINGS.

CANNOT something be cheaply applied to the outsides of hothouses that will not only economise the fuel, but also render the enclosed atmosphere more genial? The scorching drying influence produced when flues or hot-water pipes are heated beyond a certain degree, for the purpose of keeping up the requisite temperature on a cold night, is certainly an evil requiring a remedy. My impression is that in this direction a very considerable advantage may be gained. I am aware there is nothing new in this suggestion. Many practical men admitted its utility years ago; but so long as fuel remained cheap there was no inducement for incurring expense in order to reduce its consumption. The system of double-glazing houses for the cultivation of plants requiring a high temperature was pretty fully discussed some years back; and I think all those who tried the plan spoke highly of it, not only as effecting a considerable saving of fuel, but also rendering the atmosphere of the houses more genial and pleasant, and less liable to fluctuations. Double-glazing, however, would only be available in the case of houses still to be built; but cannot some plan be adapted to existing houses to effect the same object? I have no cherished scheme of my own to put forward—I am, in fact, in the position of a person seeking information; still I have, as opportunities

offered, noted various experiments leading in this direction. A good many years ago I had an early Vinery, that had not originally been built for early forcing, where the hot-water pipes were barely sufficient to keep up the required temperature on cold nights, without heating the pipes to a degree that dried up everything to a dangerous extent in their immediate neighbourhood. To obviate this difficulty, I improvised a roller the length of the house, similar to the wooden rollers used for blinds for plant houses, and by sewing together a number of Russian mats a covering was soon made that would easily roll up and down when necessary; and I had afterwards no difficulty in keeping up the right temperature without unduly pressing the heating apparatus. I am not, as a rule, in favour of a high night temperature in forcing-houses; but there is a minimum below which it is not safe to descend, and it is certain that, if early fruit is to be pushed on, a low night temperature will not answer. And the less fluctuation there is, the greater will be the success. Every practical gardener knows how to take advantage of bright sunny weather by shutting up early in the afternoon, and thus securing as much of the sun's warmth as possible; and in such weather a few degrees higher night temperature may be indulged in with advantage. I know from experiment that a covering of mats make a difference of from 8° to 10° in the temperature when applied outside; and this in the course of a season's forcing represents a very large amount of fuel. There is an advantage, also, if the covering material does not quite touch the glass; there is then a body of air more or less confined between the glass and the covering of a much higher temperature than the outer air, and this stratum of warm air checks radiation, and to a great extent prevents the moisture contained in the atmosphere inside the house condensing on the glass and dripping about the house or on the plants, to their injury. Mr. H. Howlett, when gardener at Haverland Hall, about sixteen years ago, invented a system of protecting hothouses, combined with giving the necessary amount of shade to Orchid houses, &c. I believe a model was exhibited at one of the meetings of the Royal Horticultural Society. I am writing from memory, and I was only imperfectly acquainted with Mr. Howlett's plan; but I imagine it worked with a lever at one end of the house, and acted on a similar principle to the old-fashioned Venetian blind. On cold nights the apertures were closed, and when not required for shelter or shade it might be set at any angle, so as to give the maximum amount of light. I know nothing about the expense, nor yet if it was thoroughly tested, and I only mention this to show that the idea of applying protection to the roofs of hothouses is no new idea, but has occupied the attention of practical men for years. Every gardener knows what a difficulty there is in keeping his houses right when a cold east wind rushes across them. E. H.

THE KITCHEN GARDEN.

EARLY POTATOES.

AMONG first earlies we have nothing better yet than the old Ashleaf—if the stock be true, and the seed frequently changed to prevent deterioration from what is termed "running out." I attach a good deal of importance to this, as I am convinced it has a great influence upon the vigour and consequent fertility of the plants. For several years I have been in the habit of procuring an exchange of Ashtop Potatoes from a friend in the Fens, where I know the stock is kept true, and, as our land is of a strong loamy character, the change of seed has proved remarkably beneficial. During the last two years I have noticed amongst our Ashtops a considerable number (more this year than last) of plants with foliage more or less variegated. This variegation is somewhat peculiar, and consists of irregular yellow blotches at different intervals all over the leaves. When I first noticed it I was disposed to believe it was some new form of disease, especially as it appeared early in the season (I am aware that some believe variegation in every form to be a disease); but the crop from those variegated plants was finer in quality, and at least ten days earlier than that from the green-leaved plants in the same border. So satisfied was I of this, that I intended to mark a number of the variegated plants, keep the tubers distinct, and watch the result next year; but a pressure of other matters prevented this being attended to at the right time. Amongst second earlies I am this year much pleased with the Early Rose. The crop planted in land that had been for some time free from Potatoes was something marvellous, and the quality good, the tubers, when cooked, being remarkably white and mealy. As a successional Potato we have grown for some years Wheeler's Milky White, and I consider it a very useful

Potato where tubers of good quality are in request. In all seasons (even including 1872) it has produced a fair crop of medium-sized Potatoes free from disease. Last year the Potato crop in this neighbourhood was the worst I ever remember; but there were so few diseased tubers in the three kinds I have named above as induced me to make a note of that fact and to plant more of them for the future. Hundreds of acres of the white Scotch, or York Regent, are grown annually in the Fen district for the London and other markets; and speaking generally, I don't know a more profitable Potato to grow for use up to February or March. Many large growers in this neighbourhood obtain their seed direct from Scotland, and for several years I have tried Scotch seed on a small scale with very good results; but the best crops I have ever had has been from what is termed second year Scotch—that is, from Scotch seed that has been grown one year in the Fens. There is such a marked superiority in the crop where the seed is frequently changed, both in quantity, quality, and freedom from disease, as to speedily convince anyone of the advantage of giving the plan a trial. The kind of change I consider beneficial is to take Potatoes from a sandy or peaty soil to plant on strong, loamy soils, and *vice versa*. Climate, also, may have some influence, but I believe the nature of the soil should have greater weight. I should advise a change of seed every two years, for after the second year the effect of the change rapidly diminishes. I am convinced it certainly does pay in increased produce for any extra expense incurred; and this, after all, is the main question that guides most people. From whatever cause the disease may spring there can scarcely be any doubt that the character of the weather from the middle of July to the middle of August has the greatest possible influence upon its development. If the weather is fairly dry during that critical period the disease does not manifest itself to any alarming extent; but if wet days predominate, as occurred in 1872, the state of the atmosphere is rendered very favourable for the rapid development of fungoid growth. When seed Potatoes are frequently changed they seem better able to resist the attacks of the disease; there is a strength and vigour about them very different from the debilitated plants that are grown year after year on the same kind of soil without any change. Patterson's Victoria is one of the very best Potatoes, both for productiveness and quality. E. H.

Creosoted Potatoes v. The Disease.—The Rev. J. Crawford has communicated to the *Age Observer* some particulars of an experiment which he made last spring in the cultivation of Potatoes, with a view to the prevention of disease. Mr. Crawford says that "In the beginning of this year I noticed in a newspaper a statement that the application of creosote to the eyes of the seed Potato would prevent the disease, and this induced me to make some experiments, the results of which I will now proceed to give to the public. These were made with the different varieties of earlies; the Potatoes were planted about the middle of April, and raised in the third and fourth weeks of September, the crop of sound ones being fully three times the quantity I had last year off about the same extent of ground. 1st. With a small camel-hair brush, every eye in the seed potato was slightly touched (the slighter the better) with the creosote, and in the produce of these no diseased Potatoes were found. 2nd. A part of the seed planted had one or two of the eyes not touched with the creosote, and at these were found one or two, seldom three, slightly diseased. 3rd. Another portion of the seed was planted without any creosote, and, on raising these, from one-third to one-half were found to be diseased, as in some other parts of the country. 4th. A very few of the seed Potatoes had too much creosote applied to them, and this was found to have destroyed the vegetation altogether—hence the caution under the first experiment. I am thoroughly satisfied from the practical experience obtained this year that there will be few, if any, diseased Potatoes next year in the manse gardens.

Potato Statistics.—Mr. Scott's estimate (see p. 368), of this year's Potato yield is rather over than under the mark, because of the great prevalence of disease in late crops throughout Middlesex, where, in proportion to the area occupied by other crops, Potatoes are perhaps more extensively grown than in any other county. I find that, on the average, at least one-half of the crop is thoroughly bad. Immense quantities that were got up in good time and stored have since become diseased to a considerable extent, and severe loss has been the result. With no reliable statistics to the actual average planted, it is mere guess work to put

it at any particular figure. Assuming, however, Mr. Scott's figures to be correct as to average, I maintain that 2 bushels to the rod is a fair all round average yield, and deducting one-half disease, 160 bushels or 4 tons to the acre remains, a difference of 20 per cent. in the total, or something like 1,400,000 tons. Mr. Scott mentions the case of a grower who was offered £25 per acre for his Potato crop, when it appeared to be healthy. Now taking the average at 2 bushels to the rod, not a high estimate for Essex, this would put the crop at about 1s. 6½d. per bushel, certainly a very low figure, but probably a fair one under the circumstances that the crop had to be lifted and marketed before any return came to the purchaser. I look upon this as proof that my estimate of two bushels to the rod is a fair one, and if one-half of all our winter stock is diseased, then the matter is far from being hopeful. At present growers are getting their stock into market as fast as they can, but good table Potatoes will be dear after Christmas; and seed, especially garden varieties, will fetch a high price in the spring.—A. D.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Pines.—Pot suckers whenever they are sufficiently large to separate from the parent plants without regard to the time of the year. Good established suckers taken off and potted early in autumn may now be subjected to a minimum temperature of 60° at night, with a bottom-heat of about 75°, and although both roots and atmosphere ought to be kept moderately dry, excessive aridity must not be permitted. Collect into one compartment all the plants that are swelling their fruits, as they require more heat and moisture than Pines at rest; be careful, however, not to expose them much in transmitting them from place to place, as that would materially injure the swelling of the pips. Be prepared to start Queen Pines for fruiting in April and onwards by increasing the bottom and top heat a few degrees.

Vines.—Grapes still hanging on the Vines must be gone over occasionally and all mouldy berries picked out; a little fire-heat, too, is necessary in dull weather, in order to counteract the influence of damp; and favourable opportunities should not be lost of ventilating a little during the day, especially if fire-heat be used at the same time. There is a universal complaint about Grapes damping this season. When Lady Downes' and the Black Alicante are thoroughly ripe they may be cut off with a piece of the wood attached to them, and inserted in bottles of water, the bottles to be fixed in a sloping direction so that the clusters of fruit may hang down clear of the bottles. As soon the Grapes are cut and the leaves have fallen, prune the Vines, thoroughly wash and clean the inside of the house as well as the Vine rods, and if practicable use tarpaulin, or other covering, to protect the outside borders from cold rains and snow-thaws. Vines should rest two months between pruning time and starting time, otherwise they are liable to bleed, but this can be overcome to a considerable extent by singeing the incisions with a red-hot iron, and coating them over with Thomson's styptic. Should it be necessary to start one of the Vineries this month for fruiting in April and May, fermenting material in the shape of litter and leaves should be thrown into a ridge on the floor inside, and, when it begins to heat, a portion of it should be turned daily. The moist heat arising from this is much better for the plants than a dry atmosphere caused by strong fire-heat; nevertheless, a little fire-heat will also be necessary in order to maintain an equal temperature. Unfasten the rods from the rafters, let them hang down, and syringe them twice a day with tepid water. In starting pot Vines they may be plunged in the fermenting material, but their root temperature must not be much higher than that of the atmosphere.

Peaches and Nectarines.—The sashes may be kept off the ordinary houses as long as the weather continues favourable; but, towards the end of the month it will be well to shut them up. Take indoors pot plants that have been placed outside to ripen their wood and store them closely together, protecting their roots from vicissitudes of weather by covering over and around the pots with straw or dry Fern. Old, barren, and cankered trees, if useless, should be rooted out at once and replaced with healthy ones, and if a fresh border is necessary use good substantial turf loam in preference to rich mixtures, for, by so doing, the trees will be likely to bear well and continue healthy, instead of producing gross shoots. November is exceptionally early for the forcing of Peach trees, nevertheless they are sometimes started at this season, and with excellent results, as is evinced in the case of the large and remunerative tree of the Royal George, at Roehampton Park. Where such early forcing is attempted, however, the wood should be thoroughly ripe and rested. Prune and tie in the trees to be forced in December for May Peaches

Figs.—Trees on walls and trellises may now be pruned, but the

less the knife is used, under any conditions, the better, and, indeed, if summer pinching has been properly attended to, pruning now will scarcely be required. Remove all unmaturing fruits; it is useless to keep them on the plants till spring, for they only fall off then and prevent the crop, properly so called, from making that progress which it otherwise would do. Keep the houses clean and dry, and if necessary, re-pot and top-dress such trees as are in pots, then store them in an airy shed or house, where the minimum temperature will be some degrees above the freezing point. They will require little or no water during the winter.

Cucumbers.—These should be kept as healthy as possible, even at the expense of a few fruits, because the plants should make the leaves during this month, on which they have to depend during the winter, when there is but little growth. Retain plenty of good foliage, but prevent crowding, and be content with a thin crop of fruits at any one time. Maintain a temperature of 65° or 70°, allowing a rise of a few degrees more by sun heat, if any, and water moderately; but see that the bottom part of the bed is not too dry, an evil to which it is sometimes liable.

Strawberries.—These should now be plunged in ashes in cold frames, or placed in Peach houses at rest, or they may be built into the sides of ridges, the pots being laid on their sides, so that water cannot lodge in them. Towards the end of the month the most advanced may be taken indoors for forcing.

Asparagus.—Prepare a hot-bed for forcing Asparagus in the ordinary way with leaves and litter, and make it in such a way that it will maintain a temperature of from 60° to 70° for some time. The roots usually employed for forcing are generally three years' old, grown pretty thickly for the purpose, or else they are saved from old plantations about to be broken up. For the earliest produce, however, some roots should have been grown purposely in sandy soil, and in an exposed situation, so that they would be ripe sooner than those grown in warm sheltered places, and consequently they will start more kindly into growth.

Cauliflowers.—Protect those that are in frames from hard frost by shutting the sashes and strewing some litter over them at night. Scatter some dry wood-ashes and sand occasionally amongst the plants to counteract damp, and tilt up the sashes at front and back, regulating the amount of ventilation given by the state of the weather.

Chicory Roots.—Lift some of these, pot them in light soil, and place them in a temperature of about 60°, and in a dark place, such as the Mushroom house or under a large box in any warm house.

Endive.—Half-grown plants from the open air should now be introduced into frames, and planted amongst moderately dry soil. Older plants and those established in frames, may be tied up with netting, covered with boards, old mats, or pots to blanch them.

French Beans.—Sow a succession of these in pots half-filled with rich soil, and as the plants come into flower fill up the pots to three-fourths of their brims with similar material. A warm pit, Pine stove, or forcing house, and a position close to the glass is the proper place for French Beans in winter. Syringe the foliage daily with tepid water to keep red spider in check, and give liberal waterings of the same to their roots. Pods are formed about eight weeks after the seeds are sown.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY,

NOVEMBER 12TH AND 13TH.

CHRYSANTHEMUMS formed the principal feature of this show; but of fruit and Potatoes there were likewise extensive and most interesting collections. Of real novelty there was little. The Chrysanthemums were arranged in the conservatory, along with Cyclamens, Primulas, and miscellaneous plants, and in the further arcade were staged the cut blooms, fruits, vegetables, and Potatoes.

Chrysanthemums.—Prizes were offered by the Duke of Buccleuch for a collection of Chrysanthemums; and in this class Mr. Rowe, gardener, Dover House, Roehampton, was first, with a large exhibition of erect-growing plants, including large-flowered sorts, Japanese and Pomponé kinds, the blooms of which were extremely fine. The large-flowered varieties consisted of Queen of England, bluish white; Empress of India, pure white; Princess of Teck, bluish; Lord Derby, Prince of Wales, and Maréchal Duroc, purplish-lilac; Lady Hardinge and Empress Eugénie, lilac; General Hardinge and Rev. J. Dix, crimson, tipped with orange; and Jardin des Plantes and Gloria Mundi, golden-yellow. The small-flowered sorts consisted of Golden Cedo Nulli and Antonius, a yellow-flowered kind. Mr. A. Forsyth, Stoke Newington, was second with excellent specimens of dwarfly-grown plants of large and Pomponé-flowered kinds. Some fine standards from Messrs. Dixon & Co. were third. Messrs. Jackson & Sons, Kingston, also exhibited a large group of finely-flowered plants in this class. In the nurserymen's class of twelve large-flowered Chrysanthemums, Messrs. S. Dixon & Co. were first, with a dozen fine

specimens, about 18 inches high and from 2 feet to 2½ feet through, each bearing from two dozen and a half to seven dozen fully-expanded flowers. They consisted of Mrs. George Rundle and White Venus, whites; Christine, flesh-coloured; Guernsey Nugget, Aurea Multiflora, and Gloria Mundi, yellows; Golden Christine and Antonelli, orange; Lady Hardinge, lilac; Alma, Prince of Wales, and Dr. Sharpe, purple-crimson. Mr. Forsyth was second, with fine plants, particularly Gloria Mundi, Hereward, Mrs. Forsyth (white), and Annie Salter. In the amateur's class of six large-flowered sorts, Mr. A. J. Coote, gardener to W. R. Morris, Esq., Deptford, was first, with erectly grown plants of Lady Talford, Bronze Jardin des Plantes, Prince Alfred, Mrs. G. Rundle, Aurea Multiflora, and Lady Hardinge; Mr. J. Whittaker, The Laurels, Putney, was second with good, fresh, and well flowered plants; and Mr. Rowe, third, with very tall plants bearing fine flowers. In the nurserymen's class of twelve Pomponé-flowered Chrysanthemums, Mr. W. Cutbush & Son, Highgate, were first, with very fine specimens about 2½ feet through, trained on the flat principle, and densely furnished with flowers. The varieties consisted of Bob, dark crimson; Mrs. Hutt, crimson; Salamon, Peri; Cedo Nulli, Crown, golden; Golden Cedo Nulli; Antonius, Cedo Nulli, lilac; Cedo Nulli, Madame Roussellon, lilac; Aurore Boreale, golden orange; and Andromeda. Mr. Butcher, The Priory, Hadley, Barnet, was first in the amateur's class of six Pomponés, with very fine and well bloomed plants, about 3 feet through, and trained on the dwarf spreading principle. They consisted of Rose Trevenna, Golden Cedo Nulli; Andromeda, Brown Cedo Nulli, Lilac Cedo Nulli, and White Cedo Nulli. In the nurserymen's class of a specimen large-flowered sort Messrs. Dixon & Co. was first with Prince of Wales, about 2 feet high, nearly 4 feet through, and very thickly flowered. The best specimen large-flowered Chrysanthemum in the amateur's class was Mrs. G. Rundle, from Mr. Coote. The plant was gracefully grown, nearly 4 feet through, and bore a multitude of beautiful pure white flowers. The second prize was won by Mr. Whittaker for Prince of Wales, and the third by Mr. Croucher for a very large plant of James Salter. Mr. A. Forsyth, was first for the best specimen Pomponé, with a fine plant of Cedo Nulli, 2½ feet through, one mass of blooms. Messrs. S. Dixon & Co. were second with the same sort, and Messrs. W. Cutbush & Son third, with Bob. In the amateur's class, for the best specimen Pomponé, Mr. Whittaker was first with Cedo Nulli, and Mr. Butcher second with Madame Martha. The cut blooms were remarkably fine, especially those from Messrs. Veitch & Sons, Chelsea, to whom the first prize in the class for twenty-four was awarded. They consisted of the following Chinese sorts, viz., Empress of China, pale blush; Elaine petals broad, pure white; Fair Maid of Guernsey, pure white; Blanche of Castle, white; Erectum superbum, lilac; Red Dragon and Rob Roy, reddish-orange; Bismarck, petals broad, orange; and Ching, much incurved, broad in the petal, and orange coloured. In addition to these, amongst the large flowered varieties the finest were:—White, Mrs. Halliburton, White Venus, White Globe, Mrs. George Rundle, Mrs. Heale, a sport from Princess of Wales, Queen of England, and Empress of India; blush, Princess of Wales; yellow, Jardin des Plantes, Golden Dr. Brock, Golden Beverley, Golden Queen of England, Golden John Salter, and Guernsey Nugget; lilac, Alfred Salter; Pink Perfection, Venus, Lady Talford, Prince of Wales, Prince Alfred; golden-bronze, Nil Desperandum, Golden Eagle, &c. In the amateur's class of twelve, Mr. J. H. Hinnell, Anglesea House, Surbiton, was first; Mr. J. Clarke, Lower Grove House, Roehampton, second; and Mr. Butcher, third.

Berry-bearing Plants.—A class was devoted to ornamental berry-bearing plants in pots, which produced some pretty subjects, particularly hardy ones. Mr. E. Smith, Bristol House, Putney Heath, was first; Mr. George, Putney Heath, second; and Mr. Aldous, Gloucester Road, third. The plants shown for these prizes consisted of Rivina lavis, three sorts of Aucuba, Solanum Capsicastrum and Yellow Gem, Skimmia oblata and japonica, Citrus japonica, Cotoneaster Simmondsii, Ardisia crenata, Pernettya mucronata, with dark purple berries; P. myrtillophylla, lilac; and P. speciosa, small crimson berries; Crataegus Pyracantha, and a Holly.

Miscellaneous Plants.—From Mr. J. Wills came a very large collection of miscellaneous plants, suitable for furnishing purposes or conservatory and stove decoration. Amongst them were three dozen of good specimens of the newer Dracenas, including D. Knurkiana, a strong-growing, broad arched, and green leaved sort; magnifica, excelsa, porphyrophylla, Chelsonii, Weismannii, Braziliensis, Mooreana, concinna, nigrescens, regina, and others. Besides Dracenas, there were in the same group a large plant of Todea pellucida, with fronds two and a half feet long, several very nice and graceful Palms, a large leaved Coccoloba from Trinidad, Zamia horrida and Z. Lehmanni, Aralia spatulata, some very pretty specimens of Adiantum Farleyense, and others. Messrs. Standish & Co., Ascot, showed a group consisting of about 150 plants of Bouvardias, including Vreelandii, Jasmijniflora, and Bridal Wreath, all in small pots and prettily flowered. Such valuable winter-blooming plants as these should not be lost sight of, especially where bouquets are a desideratum. From Mr. Clark, market gardener, Twickenham, came upwards of ten dozen of plants of as fine a strain of Cyclamens as is in the country; the plants were twelve months old, and just beginning to throw up numerous finely-formed flowers, varying from the purest white to the richest crimson. Mr. H. B. Smith, Ealing, sent about ten dozen of Cyclamens of the same character and fine strain as those from Mr. Clark. Mr. Coote, of Deptford, showed a dozen good double-flowered Primulas. Mr. Anthony Waterer, of Knaphill, sent a basketful of Erica vulgaris cuprea, and some very pretty plants of Cupressus Lawsoniana erecta viridis, which is an extremely handsome erect growing or fastigiated variety of C. Lawsoniana. Mr. Tomkins, nurseryman, Birmingham,

exhibited a small batch of his double *Primula sinensis*, named *magnifica*. Messrs. Rolleston & Sons had a basket of *Stylidium soboliferum*, a neat growing deep green succulent plant, and Mr. A. Murrell, gardener to W. B. Hume, Esq., Winterton, Great Yarmouth, showed a fine plant of the quaint-looking *Batemannia Burtii* with four flowers. Mr. Woodbridge, of Sion House, exhibited cut flower-spikes and foliage of *Canonia capensis*. Messrs. Veitch & Sons, of Chelsea, had a collection of new and rare plants, including *Dracena Baptistii*, a variegated-leaved *Hemerocallis* from the Cape, having a creamy margin; *Ceroxylon niveum*, *Phoenix rupicola*, a new *Cymbidium*, and a very fine form of *Cattleya marginata*. Mr. B. S. Williams exhibited *Agave Taylorii*, an hybrid between *A. geminiflora* (Bonaparte's *juncacea*) and *A. densiflora*. In habit it is distinct from both parents, and more closely resembles *A. Schidigera*, having broad white filaments along the margins of its dark green foliage. A new *Chrysanthemum* was shown by Mr. C. Waters, gardener to A. Montgredien, Esq. It is a sport from the white-flowered Mrs. Geo. Rundle, and like that except in colour, the latter being of a soft clear golden-yellow. Mr. W. Smith, gardener to C. Lowe, Esq., Henley-on-Thames, obtained a cultural commendation for a small but well-flowered plant of *Vanda cœrulea*, which bore four spikes, on which were thirty-eight flowers.

Fruits.—These consisted chiefly of Apples and Pears, of both of which large collections came from Mr. John Scott, the Nurseries, Merriott, Crewkerne, Somerset. He showed 350 distinct varieties of Pears and 600 different sorts of Apples, as well as many kinds of ornamental and useful Crabs, all from trees in his extensive and valuable collection at Merriott, where Mr. Scott is actively testing and proving new varieties of all kinds of hardy fruits in the same way as the Royal Horticultural Society used to do in years gone by at Chiswick. These fruits will be on view at our office during the whole of next week. Messrs. Ewing & Co., Norwich, showed some eighty kinds of Apples, and over two dozen sorts of Pears, and Mr. W. Gurney, Brocket Hall, Welwyn, Herts, exhibited the following seasonable kitchen Apples, viz., Wellington, Lord Derby, Mère de Menage, Blenheim Orange, Cellini, Cox's Pomona, Tower of Glamis, and Norfolk Beefing. Some three dozen dishes of Apples, and fine ornamental Gourds, were shown by Mr. Kinghorn, Sheen Nurseries, Richmond; and Mr. T. Jack, Battle Abbey, Sussex, sent nearly four dozen dishes of Apples. From Mr. Jones, gardener to her Majesty at Frogmore, came four smooth-leaved Cayenne Pine-apples, and one of Charlotte Rothschild, each weighing about 8 lbs. These were cut from plants planted out in frames. Mr. Jones also showed a dish of British Queen Pears, a seedling raised at Frogmore, and one of the handsomest Pears in cultivation, as well as a great bearer. It is somewhat after the form of Marie Louise, and brownish-russet in colour, shaded with yellow. More remarkable than any at the exhibition, as regards size, were some Apples from cordons on the French Paradise stock, grown at Pax Hill Park, Hayward's Heath, by Mr. Shepherd, gardener to Northall Laurie, Esq. These, which were pronounced by some as being the finest ever grown in England, consisted of Calville blanc, one fruit of which weighed 1 lb. 4 oz., and measured 15½ inches in circumference; Belle du Bois, 1 lb. 7 oz., and 15 inches in circumference; and very fine specimens of Belle du Caux, Reinette Grise, and Belle Josephine, the last of these being very large in size, and in colour bright golden-yellow. From Mr. J. Meredith, The Vineyard, Garston, came some very fine Grapes, including the Madresfield Court, with fine large berries, Barbarossa, Muscat of Alexandria, Trebbiano, Meredith's Alicante, Black Prince, Gros Gromier du Cantal (reddish), and Child of Hale, a great cropper, having very large bunches somewhat like Trebbiano. Mr. Grainger, Ingham Lodge, Wood Lane, Shepherd's Bush, showed some very fine examples of the Sooly Qua Cucumber. A fine basketful of Black Hamburgh Grapes, grown in one of his ground Vineries, at Southend, was shown by Mr. Wells, Bouverie Street; the bunches were individually large and well coloured, and seven of them weighed upwards of 13 lbs. It is, therefore, evident that fruit, as good as that in many Vineries, can be grown in such contrivances. Mr. Bell, gardener to the Duke of Wellington, Strathfieldsaye, staged three magnificent Black Prince Pines, in good condition; and Messrs. Lane & Son, of Berkhamstead, exhibited four very large and well finished bunches of Muscat of Alexandria.

Vegetables.—Prizes were offered by Messrs. Carter & Co., High Holborn, for a collection of vegetables, and in this class Mr. W. C. Pragnel, Sherborne Castle, Dorset, was first with one of the finest collections that we ever saw staged at this time of the year. It consisted of two varieties of Curled Kale and Cottagers' and Asparagus Kale, Fearnought and Wheeler's Improved Cabbages, Scrymger's Giant and Improved Brussels Sprouts, Dwarf Green-curbed and Early Dwarf Elm Savoy, Long White and Moore's Cream Vegetable Marrows, four varieties of Tomatoes, Globe Artichokes, Spanish Cardoons, Prickly Spinach, Sandringham White and Carter's Dwarf Crimson Celery, Salsafy, Scorzenera, London Flag and Aytton Castle Giant Leeks, Shallots; Bedfordshire Champion, White Spanish, James's Keeping, and Giant Rocca Onions; Carter's Matchless and Student Parsnips; Pine-apple, Chelsea, Osborn's Selected Red, and Carter's Perfection of Beets; White Dutch, Veitch's Red Globe, Red American Stone, Chirk Castle, and Black Stone Turnips; Long Surrey, Long Orange, and Altringham Carrots; and American Peach Brow, Scilly Red, Lady Paget, and Bresse's Prolific Potatoes. Mr. C. Osman, District Schools, Sutton, was second, also with a fine collection. For half a dozen sorts of Celery, Mr. C. Lydiard, Albion Road, Hammersmith, was first with Wall's Invincible White, Williams's Matchless Red and White, Manchester Solid Red, and White's new White Grove and Giant White.

Potatoes.—From the Gardens of the Society at Chiswick came 120 sorts of Potatoes that were grown and tested in their trial ground during

the present year. Concerning these we can on this occasion only refer to the synonymous names applied to some of them, and which were as follows:—Paterson's Blue, syn. Morayshire Blue; Red-skinned Flourball, syn. Improved Red-skinned Flourball, Berkshire Red-skinned Flourball, Red Peach Blossom, Boston Red, American Red, and Kentish Red; Red Emperor, syn. Carter's Main Crop; Willard, syn. Belgian Wax Ball; Belvoir Kidney, syn. Taylor's Kidney and Rognon Rose; American Pale Rose, syn. American late Rose; Gleason's Late, syn. Hundredfold Flake; Regents, syn. York Regents, Mitchel's Prolific, Early Oxford, Pink-eyed Regent, Rinton's White Don, Scarlet Don, Rusty Coat, and Rough Jacket; Dalmahoy, syn. Goldfinder; Golden Gem, syn. Jaune Ronde Hâtive; Bresse's Peerless, syn. Peerless; Bresse's Prolific, syn. Brown's Prolific Kidney; Bresse's Climax, syn. Gravenstein, Coppermine, and Climax; Early Goodrich, syn. Bushel's Seedling; Oxfordshire Kidney, syn. Minchin's Eclipse; Lapstone, syn. Haigh's Seedling, Original, Cobbler's Lapstone, Almond's Yorkshire Hero, Pebble White, Headley's Nonpareil, Huntingdon Kidney, Yorkshire Hero, Perfection, Pixton Pippin, Ashtop Flake, and Laxton's Hybrid; King of Flukes, syn. Queen of Flukes, Birmingham Prizetaker, and Derbyshire Prize; Davie's Matchless, syn. Webb's Imperial and Wormesley; Yorkshire Hybrid, syn. Quarantaine de la Halle; Myatt's Ashleaf Kidney, syn. River's Royal Ashleaf, Sandringham Kidney, Myatt's Prolific, Gloucester Kidney, Derbyshire Prizetaker, and Lee's Hammersmith Kidney; Nettle-leaved, syn. A. Feuille d'Ortie, Hardy's Improved Albert, Improved Royal Albert, Carter's Champion Forcing, and Early Redfont Kidney; and Ashleaf Kidney, syn. Marjolin, Oak Leaf, Walnut Leaf, Sandringham Kidney, Mona's Pride, and Dutchstone. Messrs. Carter & Co. exhibited forty-seven varieties of Potatoes, including some excellent and symmetrical specimens of their Improved Red-skinned Flourball. For a collection of Potatoes, Mr. J. Petheridge, Chipping Norton, Oxon, was first with 124 varieties; Mr. McKinlay, Woodbine House, Beckenham, Kent, was second with eighty-six sorts; and Mr. R. Dean, of Ealing, third, with forty-eight kinds. Indeed, such fine collections of Potatoes, both as regards quantity and quality, have seldom been brought together. In the class of ten dishes, Mr. McKinlay was first with President, King of Potatoes, Pioneer, Carter's Main Crop, Red-skinned Flourball, Red Flake, Salmon Kidney, King of the Flukes, Ashtop Flake, and Prince of Wales Kidney. Mr. J. Miller, Northdown, Margate, was second.

First-class Certificates.—These were awarded to the following, viz.:—*Primula sinensis* d. pl. *magnifica* (Tomkins).—The plants exhibited of this variety were evidently of strong vigorous growth, and bore fine spikes of perfectly double flowers. These shown were white and lilac in colour, and will be valuable for cutting.

Batemannia Burtii (Murrell).—A strong-growing Orchid, in habit similar to *Pescatorea cerina*, but more robust. It bears large waxy flowers, shining as if varnished, and of a warm brown colour, the bases of the segments being marked with deep purple streaks on a lemon-yellow ground.

Chrysanthemum, Golden Mrs. Rundle (Waterer).—A fine soft golden-yellow incurved flower; in form like the white-flowered form, of which it is a sport.

Apple, Lady Henniker (Perkins).—A fine new variety, crisp and juicy and well worth general cultivation.

Grape, Golden Queen (Pearson).—This is a noble addition to varieties that have already been raised at Chilwell, and will, doubtless, occupy a prominent position among new Grapes. It is a cross between Black Alicante and Ferdinand de Lesseps, and in form of bunch and berry reminds one of Madresfield Court. It is a thick-skinned late Grape, that will prove a good companion to Lady Downes.

Stoke Newington Chrysanthemum Show.—The principal prize takers at this exhibition, which took place on the 11th and 12th inst., were—Messrs. Monk, Ponsford, Rainbow, Howe, Dixon, Sanderson, Godwin, and Smith. The show, on the whole, was somewhat inferior to those of former years, a circumstance doubtless owing to its proximity, as regards date, to that at South Kensington.

COVENT GARDEN MARKET.

NOVEMBER 14TH.

CHRYSANTHEMUMS, both cut and in pots, constitute the bulk of the flowers at present in the market. Of continental fruit there is a large supply, they chiefly consist of Pears, Apples, Grapes, Oranges, Lemons, and Medlars; and of home produce, too, there are excellent samples, particularly of Hamburg Grapes, smooth-leaved Cayenne, Charlotte Rothschild, and Providence Pines, and of Pears and Apples. There are likewise some good Cucumbers, green and ripe Capsicums, and Tomatoes.

Prices of Fruits.—Apples, per half-sieve, 9d. to 1s.; Chillies, per 100 2s. to 3s.; Cobs, per lb., 1s. to 2s.; Chestnuts, per bushel, 15s. to 20s.; Filberts, per lb., 1s. to 1s. 6d.; Grapes, hothouse, black, per lb., 1s. to 6s.; Muscats, 2s. to 6s.; Lemons, per 100, 8s. to 12s.; Melons, each, 2s. to 4s.; Oranges, per 100, 8s. to 12s.; Peaches, per doz., 6s. to 12s.; Pears, per doz., 1s. to 4s.; Pine-Apples, per lb., 3s. to 6s.; Tomatoes, per doz., 1s. to 2s.; Walnuts, per bushel, 8s. to 12s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 4s.; Beet, Red, per doz., 1s. to 2s.; Brussels Sprouts, per half-sieve, 2s. 6d.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 3s. to 4s.; Cucumbers, each, 6d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horse-radish, per bundle, 3s. to 4s.; Leeks, per bunch, 3d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 1s. to 2s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 2s. 6d. to 4s.; button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Potatoes, per bushel, 2s. 6d. to 4s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Salsafy, per bundle, 1s. to 1s. 6d.; Savoy, per doz., 1s. to 2s.; Scorzenera, per bundle, 1s.; Seakale, per punnet, 3s. to 4s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, per bunch, 3d. to 6d.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

OUR GARDENS IN AUTUMN.

HERE is mid November; the London trees have, weeks since, shed their fragile leaves, and even in country gardens they are now falling fast; but bright and beautiful, in almost flower-like hues. Who does not remember one of Millais' early pictures, which he called autumn leaves? Two young girls were seen sweeping them together, and gathering them into a rustic basket, and their rich hues shone like vegetable gems, for they were touched with the gorgeous pencil of the young painter. Yes, the depths of autumn are come, and seem to sigh—

Where are the songs of spring? Ay, where are they?
Think not of them, thou hast thy music, too;
While barr'd clouds bloom the soft, dying day,
And touch the stubble-fields with rosy hue.

John Keats keenly relished the aspect of the woods and fields in autumn. The poet's eye saw and felt all the charm of the beautiful decay that crimsoned and gilded the falling leaves. Our gardens, and woods, and fields are then, indeed, in some respects even more beautiful than in dewy spring, or in high summer; for in autumn the effects of colour are produced in broader masses than even in the spring and summer flower-time. Whole trees become crimson, scarlet, orange, golden, and revel in a thousand shades of rich olives and browns. The change to autumn is not all for the worst, but, like that "sea change," imagined by Shakespeare, the vegetation of summer is changed into something "rich and rare." It is true that, as Shelley sings,—

The bare boughs are sighing,
The pale flowers are dying.

But our woods and gardens and hedgerow banks assume a new kind of beauty, and many a late-lingering flower is still blooming, here and there,

Making a little summer where it grows.

Then there are Autumn's own special flowers, especially the white and the lilac autumnal Crocuses, which, as though to be in accordance with leafless trees, come naked from the earth, with no mantle of green to envelope their delicate beauty. There are the Chrysanthemums, too, still in all their splendour. We would have a Chrysanthemum walk in every garden. It should have a bank on each side, on which the dwarfer kinds should be in front, and those of taller habit rise one above the other to the crest of the bank. What wonderful masses of colour, in exquisite contrast, might be arranged! for the horticultural artist would have a hundred tones, in delicate gradation, to play with, from purest white to palest golden, and growing into full orange; and from faintly-blushing pink to the richest crimsons and maroons. Here is a floral pallet that only requires a good artist to turn it to very exquisite account. We would have these rich flower-banks overtopped, at the back, with evergreen shrubs, both for shelter, and, to add those tones of rich and massive green in which the Chrysanthemum somewhat fails; and we would have the walk a good length, to stroll and revel in in the sunny intervals of dark November; and it should only be visited, as a delightful surprise, when all the rest of the garden was gradually becoming both flowerless and leafless. That time is now arrived; though we have the golden stars of the late yellow Jasmine gleaming against our walls, and the dark-leaved Arbutus is now rich with pearly flowers and coral fruit. The fiery spikes of Tritoma are still in glowing splendour, seeming to throw an actual warmth around them, while the pale plumes of the Pampas Grass tremble in the chilly winds; these, together with the various hues of the deciduous trees, give us beauty enough, and to spare. But these charms of autumn are of brief duration. The hectic flush of the red leaves of the summer climber is too beautiful to last, and

when most bright, the thread of their fair being snaps, and they fall lightly from the branch they have for a few brief weeks adorned; and they fall, lightly, tremblingly, towards earth, those

Red leaves, leaves trailing,
Fall unfailing,
Dropping, sailing,
From the wood.

The great Horse Chestnuts, one day majestic in their gorgeous autumn robes of flaming orange, on the next are bare, their garment of gold lying about their feet at the bidding of the first sharp frost, though the ruddy foliage of the Oak still clings persistingly to its parent boughs. But the end of November will see most of our deciduous trees quite bare of their summer clothing, and bright berries of many hues will then take the place of leaves and flowers, coming into sight as a pleasing novelty on the fall of the full-tufted foliage, among which they have hitherto been comparatively unseen. It is not till the leaves disappear that the red clusters of the Mountain Ash will play a conspicuous part in the landscape, or the dull, but warm crimson of the haws, take the place of the long departed snowy blooms that made our hedges so glorious in May; and then will the wild Rose bloom be succeeded by the polished orange-scarlet of the hips. The brilliant berry-cone of the Arum will burst its husk along the banks, disclosing flashes of such fiery scarlet as will make the lane-sides all ablaze, when the autumn sun-glow is upon them. Wild seeds and fruits of every hue will begin to show themselves, white berries and red, black berries and grey. The partially deciduous Privet will exhibit, conspicuously, its sable clusters, bright as polished jet, and the bare branchlets of the Snow-berry shrub, will seem covered with dashes of dazzling white, as though the first snow-flakes of coming winter had fallen on them. The later Blackberries and Dewberries linger long on the thorny Brambles, whose foliage of deep green, tinged with red and purple, will hold on tenaciously through many of the winter months. The single fruits of the Blackthorn—those miniature wild Plums, with their velvety purple bloom—already peep here and there among the black branches of their thickets, while the Ivy berries, in their symmetrical clusters, exhibit every tone from green to red, deepening from purple to black. But there would be no end of calling attention to the beauties of wild fruits and berries which become so conspicuous, as the leaves disappear.

In planting our gardens, sufficient attention is rarely paid to that kind of arrangement which would ensure the production of certain broad effects of form and colour which would result in a great amount of garden beauty in each successive season of the year. In spring and summer, however, the materials are so abundant that a small modicum of taste goes a great way, and consequently a good deal has been done; but in autumn and winter we have, as a rule, been too ready to conclude that the glory of the garden was over for the year, and with a vague admiration for what are conventionally termed "the autumn tints," little or nothing is done in the way of careful selection in the planting and grouping of trees and shrubs in our gardens, so as to ensure the best combinations of colour by means of leaves alone. The coloured foliage of many herbaceous plants has been fully appreciated in the "bedding-out" business of spring and summer, while the far more artistic effects in garden landscape that may be produced in autumn and winter by the judicious planting of trees and shrubs have received but scant attention. With deciduous trees alone, though but for a brief season, what charming gradations of tone, in happy juxtaposition, might be obtained. These effects might be still further enriched by the assistance of herbaceous plants, which would be but evanescent, it is true, but during a certain number of weeks, in the lushest period of the year, they would form charming innovations on the ordinary monotony of our garden at that season. Much more beautiful, and, of course, more permanent effects might be produced by a judicious combination of the endlessly varied colours of Evergreens, which, though not presenting such strong contrasts of hue, would afford chaste and exquisite gradations of tone, upon a subdued but not less beautiful scale of colour.

NOTES OF THE WEEK.

— WE are pleased to announce that Messrs. E. G. Henderson have just received from the continent a batch of good plants of that brilliant and rare Alpine plant *Silene Elizabethæ*.

— ALL interested in the growth of good Pears should plant the Doyenné du Comice extensively. Specimens sent to us by Mr. Dancer, of Little Sutton, Chiswick, prove it to be, in every respect, a Pear of the most delicious flavour. It is also a large variety, and each of the fruits sent us by Mr. Dancer was, in our opinion, quite as good as the Easter Beurré one gets in Paris in winter, and that is saying a good deal.

— MESSRS. REEVE & Co. are about to publish, in monthly parts, a new work on entomology, by Mr. Owen Wilson, called "Food Plants of the Larvæ of the British Lepidoptera." The work will contain descriptions of the caterpillars, pupæ, and perfect insects, with coloured illustrations, and a calendar of the times at which each may be found. The plan of the work, as advertised, leads us to expect that it will be found a useful one to the public generally, and to gardeners in particular.

— WE have received a coloured plate of the new Pelargonium, Queen Victoria, sent out by Mr. William Bull. Its flowers, which have peculiarly crispy petals, are not really double; but from their fulness of form they have the appearance of being so. The colour is a rich vermillion, all the petals being broadly margined with pure white, and the upper ones blotched with maroon. The contrast of the broad white margin with the vermillion ground-colour makes the flower extremely pleasing and attractive.

— As an instance of the confusion produced by multiplying botanical synonyms, M. Carrière remarks that in the general herbarium of the Muséum at Paris, the same plant is found under the names of *Wittadenia triloba* and *Aster quercifolius*, while in the herbarium of the botanical school there it is named *Erigeron quercifolius*, and *Brachycoma triloba*. M. Carrière also observes that the *savants* are not agreed as to the orthography of the first of these names, as they spell it variously *Wittadenia*, *Witadinia*, *Vittadenia*, and *Vittadinia*!

— WE find that in addition to money prizes amounting to £1,000, to be awarded at the great horticultural exhibition to be held next July in the Lower Grounds, Aston Park, Birmingham, five silver challenge cups, value twenty-five guineas each, will be given to the winners of the principal prizes in the following classes, viz., one for plants, one for fruit, one for vegetables, one for cut Roses (nurserymen), and one for cut Roses (amateurs). Such liberal encouragement will doubtless result in securing what the promoters have by anticipation promised—a grand exhibition.

— WITH reference to the introduction of the Dahlia into England we have received the following note—Those who knew Kensington fifty years ago, or more, may perhaps remember Signor Buonajuti, librarian at Holland House and teacher of Italian in that neighbourhood; he was then very old, but was still proud of having, many years before (I think about 1802 or 1803), procured a root of the Dahlia from the Grand Duke of Tuscany's garden for Lady Holland, for the Duke was very jealous of his floral possessions, and did not willingly part with anything new or rare. Signor Buonajuti certainly did not think he was bringing a Jerusalem Artichoke! a plant that had been known in England for nearly two hundred years.—C. B.

— THE Thurber Peach (named after Dr. George Thurber), which was introduced to public notice some months ago by P. J. Berckmans, of Augusta, Georgia, has since held its ground, and now, at the end of another season, it is much praised. It is a freestone seedling of the Chinese Cling—that prince of Clingstones, particularly for the southern gardens—and instead of having the straggling habit of growth of its parent, the original tree is of a most perfect pyramidal shape. The fruit is described as very large, often measuring 10 inches in circumference, round or slightly oblong; skin, creamy white, beautifully mottled or marbled with carmine or faint pink; flesh white, extremely juicy, dissolving, sweet, and highly perfumed, quality exquisite.

— THE *Gardeners' Chronicle and Agricultural Gazette*, which for the past year or two has shown great energy in the matter of illustrations, and during the present year considerably modified its plan, last week announced its intention to do so completely. Henceforward we learn that "after this year, the *Gardeners' Chronicle and Agricultural Gazette* will appear as separate publications. The bond between gardening and agriculture, however, is too intimate to be wholly severed—such a course would be unnatural. The *Gardeners' Chronicle* will still treat of agricultural subjects in general, without entering into the details required by the professional farmer. The conductors propose to avail themselves of the increased space at their disposal by giving an increased number of original illustrations, by diversifying the technical con-

tents with articles of interest to the general reader, as well as to those whose hobby or whose business leads them to devote time and attention to fruit farming, bee culture, natural history, and the many kindred subjects pertaining to country life."

— A DOUBLE Canna has been raised by a Lyons nurseryman; we do not hope much from this, as the Canna is not a flower likely to be improved by becoming double.

— To the home comforts afforded by the institution which Messrs. Veitch have provided for the young gardeners employed by them, has been added a course of lectures to be delivered between this and Christmas.

— THE Lapagerias, white and red, are probably without rivals among "cool-house plants" that flower at this season; the roof of the long corridor at Messrs. Veitch's is still starred with their blossoms. The effect, when the two kinds are intermixed, is unequalled in its way.

— THE hardiness of the Creeping Fig (*Ficus repens*), even round London, is proved by a plant in the Pine-apple Nursery. Some years ago, probably ten, shoots emerged from the top of a glasshouse there; they have since quite covered the wall above the house, and, without protection of any kind, have withstood all cold.

— It is officially stated that in 1871 Japan produced about 36,000,000 lbs. of Tea, half of which she consumed at home. The province of Yamashiro gives the best quality, and at Agura there are trees from 400 to 500 years old, the crops from which are said to be worth 20s. per lb. The hedges in the lanes and round the kitchen-gardens in the villages are generally formed of Tea shrubs.

— THE Horticultural School, which was formerly connected with the establishment of M. Van Houtte, at Ghent, and which, in 1871, was transferred to the Botanic Garden of the University in that city, appears to be in a flourishing condition, the resident pupils, as M. Van Hulle informs us, having increased in number from nine in 1871 to thirty in the present year.

— WE are informed, by M. Van Hulle, that in 1871 the Agricultural Society of East Flanders instituted a prize competition for the best kept orchards. A jury was appointed to visit, on several occasions during the year, the orchards of those who had sent in their names as competitors. At the end of the year the reports of the jury were made, and the prizes were distributed in the presence of the Minister of the Interior. The result of this competition has been to give a remarkable stimulus towards improvement in fruit-culture. During the present year the same society are holding a similar prize competition for the best kept farms. In this case the jury will not confine themselves to matters of agricultural interest merely, but will also pronounce upon the horticultural arrangements of each farm, and especially on matters connected with market-gardening and arboriculture.

— WE have received from Mr. Dancer some wonderfully fine Apples, the produce, for the most part, of large orchard trees, growing in his market garden at Little Sutton. Among them are very fine fruit of Wellington, Cox's Orange Pippin, Ribston Pippin, Blenheim Orange, Gloria Mundi, Golden Noble, Barchard's Seedling, Warner's King, King of Pippins, Hollandbury, and some dozen other kinds. These Apples must not be compared with those grown on cordons, or with such as have had any kind of special treatment, as the only labour bestowed on the trees that produced them, is looking them over during winter, and cutting off a branch or two here and there. The fruit had never been thinned, nor the trees summer-pruned, and they received no water except from the clouds. It may be added that some of them came from trees on the French Paradise stock.

— THE Americans are preparing for the horticultural department of their great exhibition. During the late exhibition of the Pennsylvania Horticultural Society, a meeting of horticulturists was held for the purpose of organising a society to aid in the horticultural department of the Centennial Exhibition in 1876. A committee, of which Colonel Marshall P. Wilder was chairman, reported a constitution and nominated officers. The society is called the "Centennial Horticultural Society," and its chief object is to aid the United States Centennial Commissioners in the preparation of plans for the horticultural department of the Centennial Exposition, the planting of the garden, the construction and management of horticultural houses, and to provide for the proper representation of the great interests of horticulture and pomology in the exhibition. The American Pomological Society is to hold a session at the time of the centennial celebration, and will co-operate in the matter of fruits. The officers of the new society are:—President, Patrick Barry, of Rochester, N.Y.; secretary, A. W. Harrison, of Philadelphia; treasurer, Wm. Hacker, of Philadelphia; vice-presidents, W. L. Shaffer, of Philadelphia; P. J. Berckmans, of Georgia; J. R. Warder, of Ohio; W. C. Flagg, of Illinois; W. C. Strong, of Massachusetts; and J. Strenzel, of California. An executive committee was appointed, including many of the principal horticulturists of the country.

THE FLOWER GARDEN.

POLYGONUM SACHALINENSE.

THIS plant, of which the accompanying is an illustration of the upper portion of the stem, is a vigorous-growing herbaceous perennial, which attains, in ordinary soils, a height of 6 or 7 feet, and somewhat resembles a giant Dock. The stem is stout and leafy from the base to the summit, the lower leaves being about 10 inches in length, somewhat heart-shaped in outline, but not quite so sagittate as our artist has made them. The flowers, which are of a greenish colour, are borne in axillary clusters, late in the summer. It forms a good companion to the better known *Polygonum cuspidatum*, and, like that species, forms an effective plant when isolated on turf in the pleasure-ground; it is also useful for planting in shrubberies, or for naturalisation in semi-wild places along with other vigorous tall-growing perennials. Of this plant we noticed a good specimen, this season, in the herbaceous ground at Kew, where it was the most effective plant in the bed in which it grew and which contained several tufts of



Polygonum sachalinense.

P. cuspidatum and various other Polygonaceous plants. It was introduced into our gardens about three years ago or so, we believe, by Mr. Wm. Bull. T. S.

SPRING-FLOWERING HARDY BULBS.

WITH the exception of what are called Dutch bulbs, probably less is known of hardy bulbs than of any other class of plants. This is a matter to be regretted; for, besides the value of many of the spring-flowering kinds for the decoration of mixed borders or for spring gardening, some of them are capable, in other ways, of adding beauty to a garden, as, for instance, by dotting them over the lawn and beneath trees or standard Roses. Among the prettiest and easiest to cultivate of all hardy bulbs are the Squills (*Scillas*), plants which thrive in almost any soil, and which are suitable for beds, patches in the mixed border, edgings round beds of American plants, or for naturalisation. *Scilla sibirica* is probably the earliest-flowering kind. It grows from 3 to 6 inches high, and produces lovely light blue flowers in profusion early in March. *S. bifolia* is a dwarf early-flowering kind, with dark blue flowers, that appear almost simultaneously with those of *S. sibirica*. There are several varieties of *S. bifolia*, the best and most distinct being those with white and rose-coloured blooms. *S. amœna* is a somewhat stronger-growing plant than either of the preceding, with dark indigo blue flowers borne on a stem about a foot high in April or May. Such sorts as *campanulata* and its varieties, *patula*, and *nutans* and its varieties, bloom about the beginning of May, and being more vigorous growers than either of the above species, should be planted among shrubby borders or naturalised. *Milla* (*Triteleia*) *uniflora* is a free-blooming hardy bulb that grows from 4 to 6 inches in height, and produces, in the month of

March, beautiful white flowers, the divisions of which have a bluish streak down the centre. It is useful as an edging to beds of dwarf shrubs, and tufts of it are very attractive in a border. It also blooms abundantly when grown in a pot, and, if grown in this way, is worthy of a position in the greenhouse. The spring Meadow Saffron (*Bulbocodium vernum*) is a handsome bulbous plant, about 6 inches high, that blooms in early spring, and has large flowers that are whitish at first and change to purplish-violet. It is useful for borders or as an edging, and thrives in ordinary soils. The Dog's-tooth Violet (*Erythronium Dens-canis*) is a plant that used to be commonly met with in gardens, but owing to the rage for novelties to which we have been accustomed of late years, it has been banished from our gardens, to make room for subjects far less ornamental. There are several varieties of this plant, all of which look nice either in small beds or tufts in the mixed border; and as it is a plant that flowers early and its leaves die off quickly, it might with advantage be dotted over lawns. *Erythronium americanum*, a species with yellow flowers, is suitable for the same purposes as the commoner kind. The genus *Iris* is one that is very rich in ornamental species, and as the bulk of these bloom in summer, we will defer speaking of them till a future time; but there are one or two kinds that are among the most useful of spring-flowering plants, and, therefore, must be included in this paper. The dwarf Flag (*Iris pumila*) is a kind that is met with pretty frequently in gardens, though it is not so common as it deserves to be. It grows from 2 to 8 inches in height, and has deep violet-coloured flowers, which are produced about the month of March. There are varieties of this plant with light blue, yellowish, and white flowers, all of which are useful as edgings, tufts in the mixed border, or on rock-work, and they thrive best in deep sandy loam, though they succeed in ordinary garden soils. *Iris reticulata* is a beautiful spring-flowering kind that is not often met with cultivated as a hardy bulb, though sometimes grown for greenhouse decoration. This species is grown very successfully as a hardy bulb at the Exotic Nursery, Tooting, at which place I once saw it pushing its lovely flowers through the snow in the month of March. It grows from 6 to 9 inches high, and its flowers are about three inches long, of a brilliant violet colour, deeply blotched with yellow, and deliciously fragrant. Being a very early-blooming species, it should have a warm sheltered position in a border, or a sunny spot, or rock-work, in good light soil. The Snakes-head (*I. tuberosa*) is another good spring-flowering *Iris*, but it is not so valuable as either of the preceding kinds. *Puschkinia scilloides*, a rare and very handsome spring-blooming plant that grows about 6 inches high, is worthy of universal culture. The flowers of this plant are whitish, delicately striped with pale blue. Useful for beds, tufts in the mixed border, or rock-work, and succeeds in ordinary soils, but thrives best in deep sandy loam. *Fritillaria Meleagris* is a showy hardy bulb that succeeds in almost any soil. The flowers of this plant are large, bell-shaped, dull whitish in colour, deeply chequered with reddish-purple, and are produced in March and April. There is good white variety. It should be planted in borders or beds of spring-flowering bulbs. The genus *Sisyrinchium* affords us a very handsome freely-flowering spring plant, viz., *S. grandiflorum*. This is a plant that grows from 6 to 10 inches high, and has narrow Grass-like leaves, the bell-shaped flowers being of a rich deep purple colour, and are produced in February or March. It should be planted in warm positions, on rockwork or borders, in good peaty loam. There is a white-flowered variety which, by-the-bye, is a useful subject for growing in pots in a cold frame, as is also the common form. The Snowdrop (*Galanthus nivalis*) is too well known to need recommendation; but the Crimean one, known as *plicatus*, which has flowers nearly double the size of the common form, is worth adding to any collection. It may be remarked that these Snowdrops succeed perfectly if dotted over lawns, their early blooming rendering them fitting subjects for such a position, as their foliage has developed and faded off by the time that the lawns require mowing. Closely allied to the Snowdrops are the Snowflakes (*Leucojums*), of which the spring Snowflake (*vernum*) and the summer one known as *L. æstivum* are valuable flowering plants.

L. vernum is a plant that grows from 4 to 6 inches in height, and produces, throughout the month of March, an abundance of pretty white fragrant flowers, with a green spot on the tips of the divisions. It is worthy of a position in the choicest collection of bulbs, and tufts of it may be planted in the mixed border or on rock-work; and, when plentiful enough, it might be used as an edging. The summer Snowflake is a more vigorous grower than its spring relative, attaining a height of from 12 to 18 inches, and producing, in April and May, pretty white nodding blooms in abundance. It makes a handsome border plant, and thrives in almost any soil or situation. The flowers of this species are useful for bouquets, and, as the plant flowers abundantly, it is worthy of culture for this purpose alone. The Grape Hyacinth (*Muscari botryoides*) is another handsome spring-flowering bulb that merits more extensive cultivation than it has yet received. It grows about 6 inches high, and has dark blue flowers, which are produced in neat compact heads. There is also a pure white variety, valuable either for beds, patches in borders, rock-work, or for edgings to beds of dwarf American plants, and thriving in almost any kind of soil. The Starch Hyacinth (*M. racemosum*) so named from the odour of its flowers being like that of starch, closely resembles the preceding kind; but both the individual blooms and heads are larger than those of that species. It is useful for the same purposes as *botryoides*, or for association with it. There are several other species of this genus; but the above named are the most useful of those that bloom in spring, while there are one or two others that bloom in summer which will be treated of in a future number.

The above will be found a good selection of spring-flowering bulbs, belonging to genera not usually included in the category of Dutch bulbs. I will now say a few words on some members of genera that are included in that class and that have not as yet been improved upon by the skill of the florist. The genus *Narcissus* is probably the richest in distinct species, all the kinds of which are ornamental when in flower, but as some of the kinds too closely resemble each other to be readily identified, I will only enumerate a few entirely distinct and desirable species that are, as yet, rarely met with. One of the prettiest, as well as one of the earliest in bloom, is *Narcissus minor*, a diminutive kind that grows only a few inches high, the blooms of which are gracefully pendent. It is a plant worthy of a position in the choicest border, and I may remark that it is a capital subject for pot culture in cool frames; *N. triandrus* is another distinct and handsome kind that has the divisions of the Primrose-coloured flowers turned back, somewhat in the same manner as the flowers of a Cyclamen, and, indeed, at first sight it looks like a yellow-flowered Cyclamen. It is a scarce species at present and should receive liberal treatment and a favourable situation on borders or rock-work till plentiful enough to be tried in other positions. The Rush-leaved Daffodil (*N. juncifolius*) is a desirable kind from 6 to 8 inches high, with narrow rush-like leaves and bright yellow flowers. It is, also, at present, somewhat scarce, and should, therefore, be planted on rock-work or in a good position of the mixed border in light sandy loam. *N. Bulbocodium*, the Hoop-petticoat Daffodil, is a distinct and pretty kind that blooms in April, the flowers being of a rich golden-yellow with the cup standing erect; useful for the same positions as the two preceding kinds. A good effect may be produced with the Jonquils and other common and early-flowering kinds by dotting them over the turf, in tufts of three or four, near the margin of shrubberies. Most of the spring-flowering Crocuses are included in the class of Dutch bulbs, but *C. Imperati* is a very early and distinct-flowering one, by no means common as yet. The blooms of this species are lilac-purple on the outer-side and cream-coloured inside, and are produced in the earlier months of the year. Of Tulips, there are several distinct and desirable species that are well suited for association with spring-flowering bulbs, either as tufts in borders or for small beds. *Tulipa Celsiana* is a dwarf-growing species about 6 inches high, with flowers, which, when fully expanded, resemble a large yellow Crocus. *T. Clusiana* is a desirable kind with white flowers, striped with red and a purple centre. It grows about a foot in height. To lovers of curiosities I would recommend *T. cornuta* the flowers of which are yellow and red, the narrow petals being curiously twisted.

T. SPANSWICK.

LEAF BEAUTY OF AZALEA PONTICA.

I do not remember ever having seen this old favourite of our shrubberies so beautifully coloured as it is this autumn. Even the most unobservant could not be otherwise than arrested by its striking appearance, especially when associated with surrounding shrubs of a deep green colour. Even the sombre-leaved *Rhododendron* seems to have had new life infused into it by its lively companion—alas, I fear, to some extent, at the expense of a good show of bloom in the coming spring, for a large percentage of the once plump buds have started into growth. The *Azalea* to which I have just alluded has not the sere and yellow hue in which it is most frequently seen, but that of a most vivid crimson, as intense as that of the Virginian Creeper. The most brilliantly-coloured plants of it are growing in a well-drained bog, gradually running off to loamy soil of a clayey nature. If *Azalea pontica* had no other charms than six or eight weeks of autumnal brilliancy, we would be amply repaid for planting it in thousands in large masses, in company with its near relation—the *Rhododendron*. I know that it is planted more extensively than it used to be, but still much more might be done than has hitherto been attempted in boggy situations that are now left without embellishment of any kind. It should also be planted more largely among *Rhododendrons*, to break their monotony; and nothing is better suited than it is for the hundreds of acres of boggy swamps to be found in the country, if they were only drained, either under or above the surface. Just picture one's self looking down or up a valley of such a character of soil, with, let us suppose, a meandering stream, here expanding into a miniature lake, there narrowing to a little streamlet, as it winds its way along, until lost between banks amid thousands of the silvery plumes of Pampas Grass and masses of *Rhododendrons*, each at intervals intermixed with *Azaleas* clothed with crimson foliage. Such a scene would be one of the most imposing character. Then, what an enchanting place would such a valley be in spring! This *Azalea* assumes three different effects in one year, each sufficient to place it in the foremost rank among ornamental shrubs; in short, no plant of such easy growth with which I am acquainted can equal it, and its fine appearance in autumn is not the least of the many good qualities which it possesses.

JOHN TAYLOR.

Macsgwynne.

BEDDING-OUT VERSUS MIXED BORDERS.

IN my remarks on "Paris Gardening," alluded to in THE GARDEN of Nov. 5th, I never for a minute pretended that "perpetual monotony with the repetition of the same sort of flowers, mixed without any reference to harmony of colour or contrast of form," was the ideal that the advocates of herbaceous borders and mixed perennials aimed at, but that it is the natural outcome of the system if it were generally adopted by gardeners. No doubt, in the hands of some few experienced botanists, who would not carry their hobby too far, mixed borders of herbaceous or perennial plants, judiciously planted and carefully chosen, might be made both interesting and ornamental; but I deprecate the idea of returning to the old herbaceous borders of my early days, and I feel certain that if the present bedding-out system is to be thrown on one side as a worn-out glove, that gardens will deteriorate again to the shapeless and incongruous masses of mixed flowers that were the staple commodity some five-and-twenty years ago. Shrubs and trees and Alpine rockeries do not, and cannot, supply the place of bedded-out gardens; it is merely a question whether we are to have mixed borders of perennial and herbaceous plants with a few annuals and other plants interspersed, or whether we are to continue our present system of bedding out, using spring plants till May, and summer half-hardy perennials for summer and autumn blooming. The greatest advocates of summer bedding can make use of shrubs and trees and Alpine rockeries as well as those who advocate the adoption of mixed borders. It is perfectly impossible to grow every kind of perennial or herbaceous plant; this can only be done at such places as Kew and other large botanical gardens; but my experience of the herbaceous quarters at Kew this year, which I inspected at the end of June, does not lead me to think that herbaceous gardens, carried on with reference to botany, can ever be made ornamental. The consequence is that the admirers of perennials, &c., must choose the most distinct and ornamental plants of the different species, just as much as we select the most ornamental plants in the

half-hardy section, as *Pelargoniums Agoratums*, *Verbenas*, &c. I can fully appreciate *Phloxes*, *Pentstemons*, *Antirrhinums*, *Funkias*, *Yuccas*, *Agaves*, &c., but I do not see their superiority to those plants commonly called bedding plants, and I only instanced the gardens at the Tuilleries, Luxembourg, Versailles, &c., as an example of the monotony produced by mixing flowers, though I cannot agree with the dictum that they were geometrically arranged. By all means have perennials and shrubs, and Alpine rockeries, in fact, gardens of every diversity of form and kind wherever there is space; but don't kick away the props, and do not cry down one system at the expense of others. I need not repeat my arguments about the use and the abuse of bedding-out, my love for bedding-out is not so profound as not to be able to see its defects. It would be as well if the ardent admirers of perennials were to let their system gain its way by its own merits, not by the abuse of the opposite system. I have no wish whatever to misrepresent their views, but I deprecate the idea of returning to the pristine simplicity of the mixed borders of our childhood, which seems to me inevitably to follow in nine cases out of ten.

C. P. PEACH.

[We are not aware that anybody has advised a return to the mixed border, pure and simple. We think Mr. Peach completely in error as to there being no alternative but the mixed border and bedding-out. Most of the errors in flower gardening and garden design arise from ignoring the fact that these two modes of decoration are really minor ones, and that there are a good many others worthy of more attention. This is no theory. The truth is illustrated already in many a garden we could name.]

SINGULAR FOXGLOVE.

In June last we received from Mr. J. Huntingford Morgan, of 17, Walham Grove, St. John's, Fulham, a remarkable monstrosity in the shape of a stem of the common Foxglove (*Digitalis purpurea*), bearing on its summit a huge flower resembling a large-sized rose-coloured Canterbury Bell. The accompanying illustration represents the upper part of the stem, showing the general appearance of the abnormal flower, and its extraordinary difference in size, shape, and direction, from the regular flowers beneath it. Our description of this singular freak of nature, given at the time, is as follows:—"It is 2 inches in diameter, and $1\frac{1}{2}$ -inch in depth, and stands nearly erect on the extreme end of the stem. The mouth is very open, and is margined by thirteen reflexed rounded lobes. It has twelve stamens and a stout pistil an inch long, and $\frac{1}{2}$ -inch, or more, in diameter. Below it are sixteen flowers, of the normal shape and size, in various stages of development. These it resembles in colour both inside and out, but it has entirely lost the characteristic form of the *Scrophularineæ*, and is in shape perfectly campanulate. Mr. Morgan informs us that the same plant flowered in the same way last year, and that the large flower on the top of the stem was the first to open, both this year and last."



Singular Foxglove.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

***Jasminum revolutum*.**—I saw this in the form of a bush the other day at Ventnor, in the Isle of Wight; it occupied a sheltered position on a lawn, where it grows and flowers freely, and has attained a large size, being 28 feet in diameter. —W. F.

***Corydalis lutea*.**—Some clumps of this in the Wellington Road Nursery have until just lately been very fully in flower. This results from sowing some seeds of it last spring, and planting out the seedlings. Thus, by growing it in this way, we get late blooms, and by treating it as a perennial, early blooms are obtained. —H. B.

Carpeting Plants for Groups of Yuccas.—What plants would you recommend to carpet small beds containing various kinds of Yucca? There are twenty-two beds in all, in which *Treculeana gloriosa*, *recurva*, *filamentosa*, and *stenophylla* are the kinds planted, and I want the beds to be permanent, so that when once planted they will remain so with only occasional weeding. —F. W. [For groups of Yuccas we know of no better carpet than the varieties of Ivy, but there are other plants very suitable, as, for example, the Partridge berry, *Euonymus radicans*, Evergreen Candytufts (*Iberis*), single and double varieties of the smaller *Periwinkle*, and, if you wished a still lower carpet, the mossy *Saxifragas* in variety.]

THE PROPAGATOR.

THE CHINESE AZALEA IN GHENT.

THE cultivation of Azaleas is carried on so extensively in Ghent, that it may interest some of your readers to be informed in what manner they are grown in one nursery, in which they form a speciality. Anyone who has imported these plants from Ghent will have noticed that they are all crown-grafted at about one foot from the root. This is a much better plan than side-grafting, which always leaves an unsightly thickening at the point of junction. Although many sorts strike freely from cuttings, that mode of propagation is not much employed, as it has been found that plants raised in that way are apt to rot off at the collar—a disease to which Azaleas are rather liable, and for which there is no remedy. The stock employed is *A. phœnicea*, which is a very hardy and free-growing sort, and is raised from cuttings in the following manner:—The cuttings are taken when the season's wood is half-ripened (say about the middle or end of August), and planted, not in pots, but in a bed in a greenhouse, filled to a depth of 5 or 6 inches with the excellent Ghent peat, and covered with sheet glass. It is very important that the soil should be well pressed down, in order to have the cuttings firmly set. They should not be very much shaded, and should be lightly syringed several times a day, taking care not to wet the soil too much. Every morning the sheet of glass should be turned over on the other side, and after a few days the cuttings may have a little air at night, increasing it gradually for about a fortnight, when the glass may be removed altogether during the night. If carefully attended to in this way the greater number of the cuttings will be found to have rooted in three or four weeks. Soon after this the glass may be removed altogether, but the house must be kept closed until they are all well struck, when a little air from the outside may be gradually admitted. During winter they should be kept in a somewhat higher temperature than is necessary for the older plants, so that they continue growing all through winter, and by spring are large enough to be potted singly and kept for a short time under glass until they are quite established, when they are gradually hardened off, many of them by that time having attained the height of a foot. In the month of May they are kept in pits or frames, in order to be safe from the frosts that often occur at that time, but as soon as the summer weather has fairly set in they are plunged out of doors on the north side of a hedge or wall, so as to be sheltered from the rays of the sun. Grafting may be performed from August until spring; the late-cut scions, however, do not take so freely as the earlier ones, in consequence of the wood having become rather hard. The tops of the stocks which are cut off may be used as cuttings. The scion is inserted in the crown by cleft-grafting, but the stock is not split across entirely, but only as far as the pith, or to such a distance as will be sufficient for the insertion of the scion. An important matter is not to use too much worsted, or other bandaging, as it has been found to retard or prevent the union of the graft. The grafted plants are then placed in an air-tight frame in the propagating house; and, as they are worked so high, it will be found convenient to lay the pots on their sides, taking care that none of the leaves touch the glass. After a few days a little air may be given in the evening, which should be shut off in the morning, the evaporation on the glass being wiped off at the same time. When it is necessary to water the plants, the pots may be raised upright. In about five weeks most of the grafts will have taken, and are then to be removed from the frame into the propagating, or other warm house, where they are kept close for some time, receiving no air. They are then gradually hardened off by removing them into colder houses into which air is admitted by degrees. In spring they are put into pits, in order to prepare them for being planted out. Care must be taken to untie the bandages and to stop the scions in due time. Any branches which the stock may produce near the graft should be cut clean away; while those on the lower part of the stem should be merely stopped, and should not be entirely removed until the growth is strong and large enough to consume all the sap. When the fine weather has set in, the plants, having been judiciously hardened off, are planted out in the open air in beds of Ghent

peat, about a foot deep. During summer the only attention they require is to be well watered and frequently pinched, so as to obtain well-shaped crowns. It is astonishing what growth they often make in the first year. I have seen plants form a head of 4 or 5 inches in diameter in one season. About the middle of September, the plants are removed from the beds and are brought into the greenhouses, the stages of which are filled with peat in which the plants are set rather thickly. When there is any want of room in the greenhouses the plants may be wintered in the same manner in pits. When they are first placed in their winter quarters they receive a thorough soaking to settle the soil well about the roots, but afterwards water is very sparingly supplied until the return of warm weather. As soon as all danger of injury from frost is over, the plants are pruned and again planted out in the open air, as in the previous year, but this time at greater distance from each other. The general treatment is similar to that employed the season before, but as the main object now is to obtain flower-buds, pinching should be discontinued after June, unless a branch happens to grow so vigorously as to spoil the shape of the head, or to become detrimental to the other branches. By autumn the plants are mostly large enough for sale, and are sent away—the greater number of them to England. I need not enter upon the subject of the cultivation and training of larger specimens, as in that no foreign horticulturists surpass the English.

Ealing.

G. CHINK.

THE FRUIT GARDEN.

PLANTING FRUIT TREES.

BEFORE planting fruit trees of any kind, the character of the ground on which they are to be placed should be well ascertained. As to the depth of soil most suitable, that will depend entirely upon the purpose for which the ground is to be used. If it is to be devoted to the production of sweet succulent vegetables all the year round, a good sound staple of 5 feet of good soil would not be too much. For fruit culture a maximum of 3 feet, and a minimum of 1½ feet will suffice. On poor sandy loams, a heavy dressing of well-rotted dung will be useful; on clays the incorporation of a good layer of half-rotted leaf-mould or ashes will best serve the purpose; but on sound loams of average fertility no manure should be added for fruit growing. Its addition only tends to grossness of habit and the production of wood, and thus proves antagonistic to that compacting together of tissue that induces fruitfulness. Planting is one of the most important events in the life of a tree, and ought, therefore, to be most carefully performed; but until quite recently no operation was more recklessly done. The trees were torn out and thrust into the ground in the most barbarous manner. Ancient cultivators sought to induce fruitfulness by barking, ringing, twisting, and cutting the branches in various ways. Modern horticulturists achieve the same result much more speedily and successfully through the medium of the roots. Before planting, take an accurate survey of them, measure their length, and then, from the point where the bole of the tree is to be placed, sweep a radius right round if the tree is to be placed in the open ground, or half round if against a wall. From this semi or whole circle remove the soil to a depth of 6 inches, or less for very small trees; then tread down the bottom quite firm, and make it even. If the soil is naturally strong or wet, no earth need be thrown out at all, but the preliminary operations of levelling and consolidating may be made on the surface itself. If only moderately strong, the hole might rise slightly from the centre to the sides. Under no circumstances should it fall from the centre to the circumference; and, as a rule, the bottom of the hole for the roots should be perfectly smooth and quite level. Over this carefully prepared base a thin layer of compost, consisting of equal parts of sweet leaf-mould and loam, may be spread. On this the tree is to be placed; fix it at once to the wall or fence, or to a stake, to be now driven into the ground for this purpose. With a sharp knife in one hand, and a root in the other, begin the process of laying out the roots to the best advantage. Handle them as tenderly as if every rootlet was endowed with

sensitive feeling. Cut off with care and precision every broken and bruised part; let the whole diverge from the centre to the circumference like the spokes of a wheel, or the branches of a well-formed, fan-trained Peach tree. Let there be no entanglements nor interlacings; give each root its own line of sway. The operation is a nice and delicate one, and must not be hurried through. It constitutes the basis of success, and it is as notably important in the science of horticulture as in that of architecture, that the foundation should be "well and truly laid." The next proceeding is that of filling in or up. First should come a covering, about 2 inches thick, of the same compost as that placed beneath the roots. Then the whole of the other earth should be broken fine with the back of the spade. It should then be sprinkled or scattered over, not thrown in heavy spadefuls upon the roots. The soil should be so placed as not to need any levelling afterwards. No foot, nor spade, nor rake should be allowed to touch the charmed circle devoted to the roots. If the trees are placed on the natural surface, of course when the operation of planting is completed an artificial mound will be raised on the top of the roots. In such cases the covering should be a few inches thicker than when the roots are under the natural level. The only consolidating agent should be water, and even this may safely be dispensed with when the soil is wet. In other cases, the earth may be washed in with from six to a dozen gallons of water, applied over the entire surface of the roots through a coarse rose. The more rapidly it is applied the more efficiently it will act as a consolidator. In a few hours after watering, the surface should be covered over, or mulched, as it is called, with a layer, about 3 inches deep, of half-rotted manure, Cocoa-nut fibre, Moss, or similar material. This exerts two influences, each of the greatest importance. It prevents the earth from becoming dry, and protects the roots from frost. The latter is of vital moment; for, although an excessive activity of root action in the winter is to be discouraged, yet it is most essential that any rootlet that may venture forth (at this season) should be preserved from injury or destruction.

A singular piece of advice requires to be given here. It is, beware of hanging the newly planted tree. The firm bottom, however, so much insisted on, is a good antidote against this danger. But no amount of artificial consolidation will arrest the further subsidence of recently moved earth. It thus happens that when trees are firmly attached, as we have advised them to be, to either walls, fences, or stakes, they are often suspended as it were between the earth and the air, as if they belonged to neither. Under such conditions the roots have to support the whole weight of their covering soil, and are often ruptured or unduly strained by the heavy load. From this hidden cause frequently spring the germs of constitutional debility. The remedy is simple. In fixing the tree securely against any violent horizontal movement, see that one end of the tie is so arranged as to admit of a vertical depression. With this freedom of movement downwards there must, however, be combined resistance to horizontal motion. Otherwise, just as the roots lay hold of the soil, their tender and delicate points will be broken off by a change of place. A succession of such deprivations will prove as injurious to health and as fatal to strength as hanging.

As to the time we should plant, there is no period during the whole year so good as the last week in October and during the present month. In stating this, I am aware that others recommend an earlier period, and that planting can be successfully performed up to the middle of April. But, in reference to either very early or very late planting, one is tempted to ask, "for what good?" We have never heard any very forcible arguments in favour of spring planting. The chance of loss is greater, and the certainty of perfect success is lessened every day that the planting of fruit trees is deferred beyond the end of the year. The advantages claimed for very early planting are also rather problematical. November, in short, seems the very time for planting deciduous trees. The absence of sun and the presence of fogs check or stop the loss of fluids; and this husbanding of the juices of the newly moved tree is of more value to it than any help it may or may not receive from the languid action of unfallen leaves. Having thus properly prepared the soil, skilfully planted, securely fixed the tree, and guarded its roots from extreme cold, and

performed all these operations at the right time, and in the best possible manner, the next thing demanding attention is, when and how is the tree to be pruned; in answer to the first question, certainly not now. To mutilate the roots and decapitate the head together is neither desirable nor wise. The newly-planted tree should be left unpruned until its terminal buds begin to grow. Then, and not till then, should its top be so reduced, as its existing state and future prospects may seem to demand. F.

SIR PHILIP CRAMPTON'S PEAR TREE.

I READ in your Journal of the 2nd of August (see p. 101) some observations from a correspondent on the Pear tree in

front of my house, which was planted by the late Sir Philip Crampton, in 1815. The article, with some few exceptions, is correct, but I do not think it assigns the real cause of the fertility of this town tree. In spring it presents a most beautiful display, being covered with a sheet of white blossoms, arranged in many parts in bunches, like so many wedding bouquets. The end of the stem and root are imbedded in earth, kept up by a wall of brick about a foot and a half high. The large roots have ample room in the soil (which is fine clay) under the area flags. It is carefully manured every second year, and properly pruned by a skilled gardener every year. I believe, however, its great fertility depends on its having a sewer passing about 3 feet in front of it. This sewer runs a short distance along the area to join the main sewer. It receives only the slops from my study basin, containing a good admixture of soap-suds, with an occasional dash of blood. Some few years ago I had this sewer opened, and I found that all the small roots (with a few trifling exceptions) went through the joinings into the sewer, as if guided by instinct to where they would find the greatest nourishment and the greatest moisture. So thick were they that they resembled bundles of Birch-broom, and threatened to stop up the sewer. You will better judge than I can whether this is the cause of the tree being yearly loaded all over with Pears, single or in bunches, one bunch (of which I send you a photograph) containing twenty-two Pears. Whether, also, it accounts for its luxuriant growth; for, did I let it, no doubt, it would cover the whole house. To check its ascent I do not allow it to get much above the base of the third story windows, as, even at that height, it is troublesome to put up and fix sufficiently high ladders, and it tries the nerve of the gardener to nail and prune a tree so high from the ground. It faces due south, and therefore has a warm

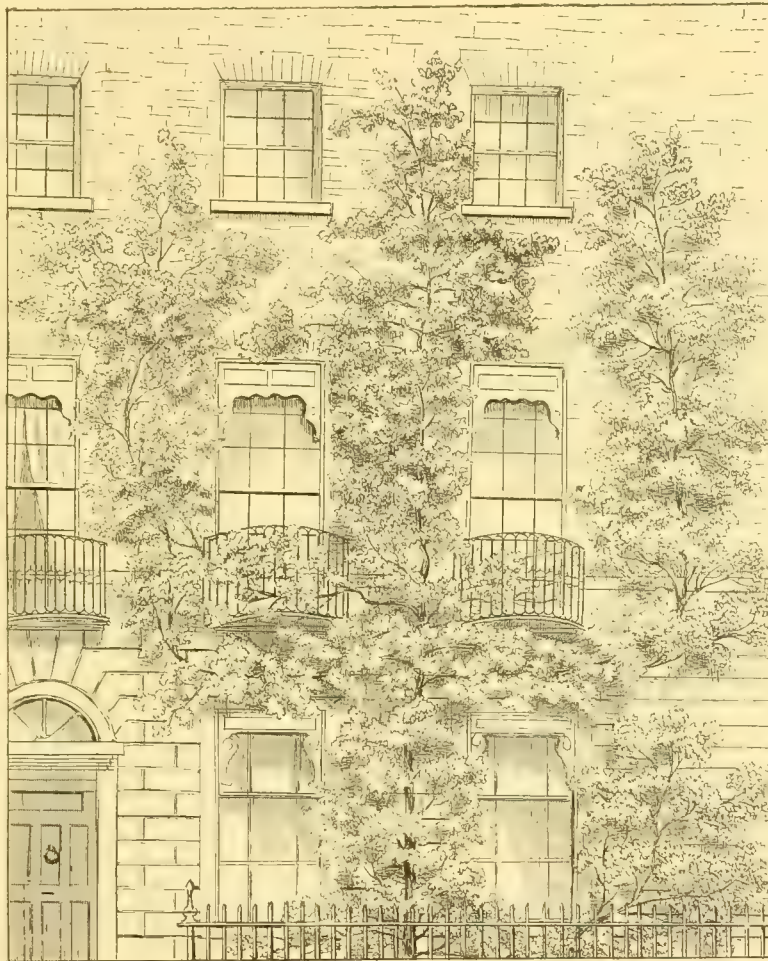
sunny aspect, and bears fruit every year, but not always so abundantly as this season. The prevalence of a cold easterly wind during the period of blossoming has a powerful effect in checking the quantity of fruit, and sometimes an open street on a line with this side of the square brings that wind full on it. Sharp frosts also materially affect it. The Pears gathered this year numbered 1,700.

JOHN HAMILTON.

14, Merrion Square North, Dublin.

AN AUSTRIAN SCHOOL OF FRUIT CULTURE.

PLEASANTLY situated on the slope of a hill, a few miles from Vienna, lies the little town of Klosterneuburg, well known on account of its "Stift" (an ecclesiastical foundation), its wine, and its pomological and viticultural school. The latter, with which we are here concerned, was founded in 1860 by the Vienna Agricultural Society, and during the thirteen years of its existence has been attended by as many as 500 students, destined to become practical fruit growers, managers of Vineyards, "superintendents of trees" (i.e., of parish plantations and orchards), gardeners, and teachers. Thanks to the liberality of several private individuals, the support of the above-mentioned and other associations, and assistance given by the province, some twenty-four young men are enabled to follow the two years' course at the institution on payment (for certain school necessities) of the merely nominal sum of £3. Every subscriber of £10 per annum to the school funds is entitled to propose a candidate for admission, the qualification for acceptance being that the latter shall pass successfully a preliminary examination. In addition to the resident students—the twenty-four just alluded to—there are a few outdoor pupils and a limited number of "hospitanten," amateur fruit growers, and others, who only attend certain branches of instruction. During the summer course, which lasts from April 1 to November 1, the students



Sir Philip Crampton's Pear Tree in Blossom.

have nine hours a day of practical work, assisting in the operations of the garden, vineyards, &c., and three of theoretical instruction; whilst during the winter term, lasting the other six months of the year, they have three hours of oral instruction, and six or seven hours of work. The programme of studies is a somewhat comprehensive one, embracing physics, chemistry, botany, geology, mineralogy, entomology, and the rudiments of zoology, book-keeping, geometry, surveying and levelling, plan and machine drawing; the more special subjects being fruit growing (including Vine culture) in all its branches, gathering, storing, drying, preserving, packing, and transport of fruit; sale and profits derived from fruit and wine growing; diseases of fruit; manufacture, classification, and sale of wines; outlines of agriculture, and rearing of silkworms. An examination takes place at the close of each term, and on leaving the student receives a certificate testifying to the degree of proficiency he has attained in the above branches. Should the certificate be a favourable one, he

experiences no difficulty in meeting with a remunerative appointment. With all the aids and appliances likely to be of use in facilitating study or rendering the instruction given more intelligible, the institution is well supplied, possessing besides a library, museum, and well-appointed laboratory, a large collection of implements for Vine culture. As to the outdoor opportunities of observation and practice, the acreage belonging to the school and "Stift," and devoted to fruit (and especially Vine) culture, is amply sufficient to meet all requirements. Fortunately, for purposes of experiment and comparison, almost every diversity of soil and aspect is met with in the neighbourhood of Klosterneuburg; and that full advantage has been taken of the circumstance will be admitted when we mention that the trial grounds of the institution contain over 1,000 sorts of Vine, every wine-producing division of the Empire, and every district in South Austria having representatives there, cultivated in the spot most suited to them. Specially remarkable is the fine collection of table Grape Vines, one hundred kinds in all, planted in rows of twenty. In illustration of the various modes of training, pruning, and arrangement, a certain number of acres is divided into forty plots, each plot containing one hundred plants (of the blue Burgundy kind), grown in a different way from the rest. The student is thus enabled to compare the results of one method of treatment with those of another; and whilst in the trial Vineyard he can familiarise himself with the situation and soil each sort of Vine prefers, in the experimental cellars of the institution he can become acquainted with the respective merits and peculiarities of the produce, and with the different manipulations requisite for bringing it to maturity. Equally well arranged with the Vineyards, from an educational point of view, is that portion of the school land—twenty-nine acres in extent—allotted to the raising of other kinds of fruit, and known as the pomological garden. Situated on a gentle incline, it is laid out in terraces, and contains about 3,000 varieties of the Pear, Plum, Apple, Cherry, Currant, Raspberry, Gooseberry, Strawberry, Quince, Nut, and Almond—a noticeable feature being the espalier orchard, in which there are over 1,000 trees cultivated in all the more approved forms. By far the greater part of the pomological garden is occupied by a nursery of Apples, Cherries, Pears, and Walnuts, these being raised in sufficient quantities to allow of an annual sale of 50,000 young trees. As to the number of Vines despatched every year from Klosterneuburg to different parts of Germany and the Austrian Empire, it would be under the mark to put them at a million. How greatly this distribution of improved varieties must tend to encourage the production of better wine throughout the country will be self-apparent. Without it, description or praise of any particular sorts the authorities of the school desired to introduce would be of little avail. Another step calculated to exercise a powerful influence on fruit culture and wine production, by affording facilities for scientific research and experiment on subjects connected with them, was the addition to the Klosterneuburg establishment in 1870 of a chemico-physiological station; and we cannot better indicate its sphere of usefulness than by giving a brief summary of the work undertaken by it last year. The attention of those conducting it was occupied with microscopic observations on the growth and nutrition of the Vine; experimental culture of the Vine to test the efficacy of different manures on the plant; investigations relating to the flow of sap in the Vine in spring, and to the ripening of different sorts of Grapes; experiments undertaken to observe the effect of temperature on the process of fermentation and of electricity on wine; studies connected with Grape sugar and its derivatives; chemical and microscopic examination of samples of Grapes (sound and diseased), and of Vines attacked by *Phylloxera vastatrix*; and analyses of various sorts of wines, Vineyard soils, manures, &c. Some of the experiments and analyses were undertaken at the request of the Government, others at that of wine growers and wine merchants, the results obtained being made known when the subjects possessed sufficient general interest in *Der Weinlaube*, an ably conducted periodical founded by Freiherr von Babo, director of the school. Respecting the "outside" work of the station, the director and staff have acted in the capacity of judges at vinicultural and pomological exhibitions, attended the meetings of oenological societies, and visited different localities in order to observe and report to the Government on the spread and ravages of *Phylloxera vastatrix*. In addition to the Klosterneuburg Institution, of which we have above given a short account, there are thirteen or fourteen other schools in Austria established with a view to diffuse useful information on fruit-growing (including Vine culture) and all branches of gardening; some supported by horticultural and agricultural societies, some by the province, and some by private individuals (occasionally, as in the case of Klosterneuburg, by all three jointly), the State bearing, in several instances, a portion of the expense.—*Field*. [As the State does not now take up such matters in this country, it may not be amiss to suggest that the establish-

ment of a good school of fruit-culture, or one devoted to any other important branch of gardening, would be more appropriate work for the Royal Horticultural Society than the endowment of botany.]

ROOT-PRUNING FRUIT TREES.

If the seasons were always so favourable for fruit growing as to enable us to secure a fair crop of fruit annually, and if the soil in all gardens were thoroughly drained and of a character suitable for fruit culture, there would be little necessity for any anxiety about the roots. But, unfortunately, a really favourable spring for fruit culture is the exception, not the rule, and trees that are only partially cropped have a tendency, in spite of careful summer management, to run into undue luxuriance of growth, inducing a corresponding root action, which still further aggravates the evil. I repeat, if rampant growth could be retarded and kept within due limits by an annual crop of fruit, there would be little necessity for root-pruning. But as that much-desired consummation is not likely to be achieved as regards our outdoor fruits till March, April, and May, we must, in most soils, in the case of all restricted trees, keep an eye upon the underground growth as well as upon what is above the surface. In other words, when trees occupy positions where their branch growth must necessarily be restricted in order to keep them within the proscribed limits, some restrictions must be placed upon the roots also, to maintain the balance of power and induce continual fertility. Autumn is the proper time to operate upon the roots of all trees that are unfruitful through over-luxuriance; but no man, however large his experience, can lay down rules to suit all cases. I have, however, always found it a good plan, when root-pruning large trees of fifteen, twenty, or more years' growth to open a trench from 3 feet to 4 feet from the trunk, only half round the tree at one time, leaving the remainder to be done in a year or two after the result of the operation had manifested itself. In the case of old trees, it is a decided advantage to remove all the exhausted soil taken out of the trenches and from amongst the roots, and to fill in with fresh soil, either from a heap specially prepared for the purpose, or, if this cannot be done, then exchange it with soil from the vegetable quarters that have not been exhausted by fruit trees. This, of course, involves rather more labour, but it will have a far more decided and lasting effect; and it is far more profitable in the long run to do a thing well, even if it should be necessary to incur a little more expense at the time, than to half do anything. In the case of all trees of a manageable size (say under ten years old), I prefer taking them up carefully and re-planting them, at the same time laying the roots out straight without any severe pruning, merely shortening back long naked roots, and carefully smoothing all wounds, working in also a little fresh loam to encourage the production of fibres close at home. This is the best plan to adopt with young trees that are late in coming into bearing, and it will invariably be crowned with success.

E. H.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Arrangement of Fruit for Dessert.—Can any of your readers give me a few hints on the arrangement of fruit on the dinner-table? If so, I shall be much obliged.—*ENQUIRE*.

Lady Derby Apple.—In answer to Mr. Williams (see p. 378), I may mention, that when at South Kensington last week, I spoke to Mr. Barron about this Apple, and he kindly informed me, that the Apple shown as Lady Derby, at the Manchester International Fruit Show, was the Whorle Pippin. And Mr. Williams's description corresponds with that variety in colour, shape, and the period of ripening, all of which leads me to believe that the variety cultivated here by Mr. Scott, is the true Lady Derby.—*ALFRED STACEY, Merriott Nurseries, Crewkerne*.

Veitch's Seedling Pine-apple.—This excellent Pine only requires to be better known to be very generally cultivated. As for autumn and early winter use I find it a most useful variety; in fact, next to the Smooth Cayenne, I prefer it to any other sort for this season of the year, and as it is a sort that produces suckers as freely as the Queen, it is easy to increase the stock of it, much more so than the Smooth Cayenne. It is very distinct from any other variety, having long slightly-arched leaves, tinged at the edge with dark red, giving it somewhat the appearance of the Black Jamaica. I find that it swells its fruit much more evenly than that variety. The fruit is pyramidal in shape, with broad flat pips of a dark yellow colour, tinged with red, and of excellent quality; it is solid and juicy, and will keep in good condition for some time after ripening.—*J. G.*

The Variegated Pine-apple.—This beautiful plant is seldom seen in good condition, owing to its being grown like other foliaged plants, and consequently getting too much shade and pot room. We have grown most beautiful specimens of it in our Pine stoves by elevating the pots on a single stake, on the top of which a flat piece of wood was nailed on which to set them, right clear above the other Pines, almost touching the glass, and fully exposed to the sunshine: even on the brightest day in summer we never shade established plants of it. We use as compost for it peat and turfy loam and grow it in small pots. The leaves droop over the edge of the pots in such abundance as to quite conceal them, and vary in their beautiful shades of variegation from clear white to a fiery red. We have one now swelling a very handsome fruit, the crown of which is beautifully variegated. Two or three good specimens of this handsome Pine helps to give both variety and interest to a Pine stove.—*J. GROOM, Henham Garden*.

THE GARDEN IN THE HOUSE.

DYEING AND COLOURING FLOWERS, GRASSES, AND MOSSES.

DYEING is especially used for the red *Xeranthemum annuum* fl. pl., red Asters, and all kinds of ornamental Grasses. Mix ten parts of fresh water with one part of good nitric acid, plunge the flowers in, shake off the liquid and hang them up to dry, as described in my last articles. In this way *Xeranthemums*, which should be cut when entirely open, will acquire a beautiful bright red tint; while Grasses only become a little pale red on the tops, but will keep afterwards for many years, and may, if needed, be coloured otherwise at any time. Asters generally, when treated in this way, are not so fine as if dried in sand, or smoked with brimstone. To colour flowers and grasses blue, violet, red, scarlet, and orange, use the different kinds of aniline; for yellow use picric acid, and for bright scarlet use borax. The aniline dye should be dissolved in alcohol before it is fit for use, in which condition it should be kept in well-closed bottles until it is required. It may also be purchased in a dissolved condition of any respectable chemist. To colour by means of aniline, take a porcelain, or any other well-glazed, vessel, pour in some boiling water, and add as much dissolved aniline as will nicely colour the water. According to the quantity of aniline used, the colour of the flowers will become more or less bright. After the water has cooled a little, plunge in the flowers or Grasses, and keep them in it till they are nicely coloured; then rinse in cold water, shake off the liquid, and hang them up in the open air to dry. To obtain a fine blue, take aniline bleu de lian, boil the colour with the water for five minutes, and then add a few drops of sulphuric acid before using. For violet, use one part aniline violet and one part of aniline bleu de lian; for red, aniline fuchsin; for scarlet, one part of aniline fuchsin, and one of aniline violet; for orange, aniline d'orange; for lemon colour, picric acid, which should be dissolved in boiling water and then thinned with a little warm water. Dip in the flowers, but do not drain off the liquid. All kinds of ornamental Grasses can be thus coloured (especially *Stipa pennata* and *Ammobium alatum*), white *Xeranthemums*, and most other everlasting flowers. Immortelles, however, as well as the other kinds of *Helichrysums*, must be treated differently; their natural yellow colour must first be extracted by dipping them in boiling soap-water, made with Italian soap, and afterwards dried in an airy, shady place. The flowers generally become closed when thus treated, and should be placed near an oven and subjected to the influence of a dry heat, when they will soon re-open. This is very important, if they are intended to be coloured; if not, they will remain fine pure white Immortelles. Most Immortelles, however, are coloured bright scarlet by means of borax, which gives a beautiful colour, but it does not keep well, and becomes gradually paler. For this purpose dissolve as much borax in boiling water as will colour it nicely; when cool, dip the flowers, but do not allow them to remain in after they have taken the colour; if kept in too long, they will not again open their flowers. The chief point in every mode of colouring Immortelles is to place them first in a dry warm atmosphere, where they will open their flowers well; and, after colouring, they should again be exposed to heat, by which means they will nearly always re-open them. Very nice-looking Immortelles are also produced by colouring only the centre of each flower scarlet, which is done very rapidly with borax, by means of a small pencil or a thin wooden splinter, which is dipped into the colour and afterwards applied to the centre. This is generally done by little children in those establishments in Germany and France which supply the trade with everlasting flowers. Finally, I shall give a very cheap and very good recipe to colour ornamental Grass and Moss a beautiful green. If a dark green is required, take two parts of boiling water, one ounce of alum, and half an ounce of dissolved indigo carmine; plunge the Moss or Grass into the mixture, shake off the liquid, and dry the Grass or Moss in an airy shady place. In the winter, however, they should be dried by means of fire-heat. If a light green is required, add to the

above mixture more or less picric acid, according as a more or less light shade is required.

I have now communicated all I know about the art and secret of preserving flowers, which has become so very important to our flower trade during the last ten years, and I only wish that others may also be induced to relate their experiences on this interesting subject.

G. WERMIG.

PERFUMES FROM THE GARDEN.

THE ordinary method of obtaining the perfume of flowers, and one that has been employed for ages, is by distillation. Shakespeare tells us that

flowers distilled, though they with winter meet,
Lose but their show; their substance still lives sweet.

or, in plain prose, that by distilling flowers, we may possess their sweetness in winter, when their beauty has passed away. The odour of flowers is due to a minute portion of a volatile oil, which is continually generated and given off by the plant. When the flowers are distilled with water, the essential oil rises with the steam and is condensed with it in the receiver. But the fragrant principle may be obtained in another way, which, as it requires no apparatus, may furnish an agreeable recreation to some of our readers who have flower gardens and plenty of leisure. The sweetness that would otherwise be wasted on the summer air may thus be saved to delight the sense long after the blossoms that exhaled it have perished. Gather the flowers, with as little of the stalk as possible, and put them in a jar three-quarters full of Olive or Almond oil. After they have soaked in the oil for twenty-four hours, the whole must be put into a coarse cloth bag, and the oil squeezed out; then fresh flowers are to be added, and the process repeated for twenty days or more, according to the strength of the perfume desired. When the odour of only one species is wanted, an immense number of the flowers are necessary to produce a scented oil, and special cultivation would be required to furnish them; but the amateur may use almost any sweet-scented flowers that come to hand, and get a mixed perfume, or *millefleurs* ("thousand flowers"), as the French call it. The smaller kinds are to be preferred for the purpose, such as Sweet Pea, Mignonette, Stocks, Clove Pink, &c. The larger blossoms are not adapted for use by the novice, as the odour they impart does not compensate for the space they take up. The oil, when thoroughly perfumed, is to be mixed with an equal quantity of strong "deodorized" alcohol, and shaken every day for a fortnight; after which the spirit may be poured off quite clear and bright, and will be found highly charged with the odoriferous principle that was collected in the oil. Flowers that are going out of bloom are as good for this purpose as those in their prime: so that the garden need not be despoiled of its beauty for the experiment. To quote Shakespeare again,—

Of their sweet deaths our sweetest odours made.

We presume that most persons would prefer to buy their perfumes rather than to manufacture them in this way; but some may enjoy the work for its own sake, and consider that the fragrant product is worth all the time and trouble it has cost.—*Journal of Chemistry*.

USES OF THE SUNFLOWER.

AMONG the plants of which we in England generally fail to make the most is the well-known ornament of our gardens, the *Helianthus annuus*, and yet, according to the *Food Journal*, there are few vegetables which could be turned to more account. We have no excuse for this neglect, for the plant in question has long been known and cultivated in this country. Towards the end of the sixteenth century we hear it spoken of as a common garden flower, so that the date of its first introduction into England from Peru must have been considerably earlier. The only way, generally speaking, in which the Sunflower is utilised in England is the employment of the seeds as food for poultry and smaller birds, and this purpose it answers admirably. But besides this, there are numberless other and more important uses to which it could be put, but which we have generally neglected. Other countries have not been so backward as England in recognising the useful properties of the Sunflower. In the north-west provinces of India it is cultivated to a considerable extent, and with much success, in swampy districts; and it is asserted that the Sunflower plantations exercise a beneficial influence on the health of the neighbourhood, by tending to check the malarious fevers so prevalent in those parts. The Agri-horticultural Society of the Punjab, in a recent report, advocates the more general cultivation of the Sunflower for utilitarian purposes, and also enumerates some of the advantages which would attend it. We find that the flower leaves,

removed without deranging the seeds, may be used as fodder for cattle and with great success; the stalks when burnt produce large quantities of potash; and the seeds, besides their use in feeding poultry, already mentioned, may be made to yield a large percentage of oil. In the United States of America, where Sunflower cultivation is carried on to a considerable extent, principally on account of the value of the plant as an oil producer, as much as 40 per cent. of oil is, on an average, obtained from the seed. After the process of expressing the oil, the refuse, under the name of "marc," is largely used as a fattening food for oxen, hogs, &c. More than this, the leaves also may be utilised; for, by parching and powdering them, and then mixing with bran, it is said that a food is produced to which cows are especially partial. Even if it had none of these qualities to recommend it, the excessive fondness of bees for the blossoms of the Sunflower would alone repay all owners of apiaries for the trouble of cultivation. Here is a long list of uses, but we have not done yet. There is another still, which, although we ignore it, the ingenious Chinese have not suffered to escape them. The stalks of the Sunflower, when subjected to the same treatment as flax, yield large quantities of fine useful fibres; and it has been supposed that the shrewd Celestials make an extensive use of these in their silk manufacture. Any one of all these valuable properties would seem sufficient to induce the general cultivation of the Sunflower; but, when we hear, in addition, that the dried leaves make a good substitute for tobacco, and the roasted seeds for coffee, the neglect of this really useful plant, in this age of adulteration and spurious imitation, becomes more surprising than ever. Moreover, the Sunflower is by no means fastidious as to soil, and may easily be cultivated similarly to Indian Corn, either sown broadcast or in rows. Another Sunflower, which is somewhat more highly regarded in England, is the Jerusalem Artichoke (*Helianthus tuberosus*), which derives its name, not from any connection with the Holy City—although the soup made from the roots is called Palestine—but merely from the fact of its being a Sunflower, the Italian name for which is *Girasole* (sun turner), and of this "Jerusalem" is an obvious corruption. It seems possible that the Jerusalem Artichoke was known to the Romans, and used by them as a table vegetable; but it was afterwards neglected and forgotten, and in 1610 was re-introduced, somewhat later than the Sunflower. At first it was largely cultivated in England, and became so common that we hear from a contemporary writer (Parkinson) that, "even the vulgar began to despise them." It found a dangerous rival in the Potato, and subsequently fell into a general disrepute, and at the present time is not cultivated nearly so extensively as it deserves, considering its many useful qualities.

TREE LOPPING AT MIDNIGHT IN EPPING FOREST.

THE right to cut firewood in one of the Crown Forests, and carry it away without payment of money and without reference to price, is, in view of the rates current on the Coal Exchange, a very precious privilege; and, independent of the principle involved, it is no wonder that the residents in Epping Forest parishes are at some pains to preserve it. That in order to that end they should remain out of their beds long after the usual hour of retiring, and should assemble on Staple Hill to "lop" the trees as the clock chimes twelve on a November night, is a ceremonial for the necessity of which they are told to thank Queen Elizabeth. That Sovereign had a residence within the bounds of the forest, near Chingford, the ruins of which, known as Queen Elizabeth's Lodge, remain to this day. It is alleged that, being moved to compassion by the condition of the poor in the neighbourhood, the good Queen gave them permission to lop and carry away for their domestic use the branches of the trees that then abundantly grew in the Forest. It was part of the bargain that none were to use for the removal of the faggots other conveyance than a hand sledge, or if a larger cart were brought into requisition it was to be drawn by a mare, with hind feet shoeless. Finally it was decreed that this gracious charter was to be enjoyed upon the condition of the residents in the parishes commencing to lop the trees on the first stroke of midnight on the 11th of each November, which accomplished, they were to be at liberty to cut and carry off wood throughout the winter, and up to the 23rd day of March. The four parishes contiguous to the Royal Lodge—to wit, Loughton, Theydon Bois, Waltham Abbey, and Epping—were included in this charter; and whether the donor was Queen Elizabeth, of which there does not appear to be much trustworthy evidence, or whether the custom has a still older origin, it is certain that for some time after the Elizabethan era the privilege described was exercised in each of these four parishes. But the good Queen had not been in her grave half a century before the popular right of estovers in Epping Forest began to be successfully assailed. On the evening of the 11th of November, 1611, the lord of the manor sent

out into all the byways of the forest, and, with soft speech and friendly entreaty, compelled all the poor of the parish of Waltham Abbey to come in and sup with him. "There never was such an exemplary community," the wily seigneur said, as he filled their cups and heaped up their platters, and bid them eat, drink, and be merry. But when the clock struck twelve, his manner changed to one of mocking scorn, and the people knew that they had been tricked, and that they had irrevocably sold their birthright for a mess of pottage. In the parish of Epping the privilege of lopping has been practised within living memory, and here the right was lost in a way more in accordance with later civilization. The lord of the manor being grieved by the untidy appearance of the forest consequent upon the irregular lopping, proposed to his tenants that he should cut the firewood for them, undertaking not only to do so without charge, but to deliver the faggots at their doors. The tenants accepted the proposal, and for some years the bargain was fairly carried out. But in process of time his lordship grew lax in the delivery of the wood; next required those in need of it to come and fetch it themselves, and finally refused either to cut it himself or to let the tenants cut it. In Theydon Bois, the popular privilege is still exercised, but in a timid, secret manner, the tenants not feeling strong enough openly to assert their right. The fourth of the endowed parishes—Loughton—nearly lost its right by falling into a trap similar to that which closed over their neighbours at Waltham Abbey. They also were invited to a great supper on a certain 11th of November, and, unable to resist the temptation of unlimited beer and illimitable roast beef, they entered the manorial hall and ranged themselves around the seemingly hospitable board. But happily there was one amongst them who, to use the homely words of Pigbones, "smelt a rat, and was forewarned to put his foot heavily down on the same." About half-past eleven, the tenants having well eaten and drunk, "an old man rose, and giving the signal, the poor people rushed forth" out of the hall into the forest, where, as the clock struck midnight they applied themselves to the lopping with a lustiness whereto the lord of the manor's beef and beer had in no small degree contributed. The custom thus preserved remains in force in Loughton to this day, and the earliest moments of the morning of the 11th inst. were ushered in on Staple Hill amid the sharp sound of the falling axe. Some of the gentlemen who have banded themselves together in the noble enterprise of preserving the people's heritage in Epping Forest determined to be present at the ceremony at midnight on that Tuesday, and with that view met at supper, in the Crown Inn, Loughton. Supper over, thick coats were donned, leggings buttoned on, lanterns lit, and a start made for the trysting-place in the forest, where the trees were marked for lopping. It was at the outset a dark, almost starless, night, with a keen wind blowing promise of a frost. But before half the brief journey had been performed, the stars came out, and presently the moon emerged from a bank of clouds, shedding over hill and forest glade a flood of silver light that put to shame the lanterns. There was a spice of excitement in the midnight enterprising, and there was also a great deal of mud in the pathways, occasionally culminating in the small ditches in the vicinity of the gates that had to be passed through. As the pathways neared the top of the hill there was less mud, but there were more treacherous stumps, relics of felled trees, over which the unwary occasionally came to grief. Shouts from the top of the hill guided the party to the appointed goal, where were found assembled a considerable body of the freeholders of Loughton, armed with axes. It wanted three minutes to twelve, but all was ready for the signal. Just as—twelve miles off—the clocks from the steeples of London were chiming the first notes of midnight, here, out on this bleak hillside, a score of axes fell on the boughs of as many trees, each stroke meaning a protest against seigniorial innovation, and a declaration of a determination to maintain to the last the centuries-old rights of the people. As the still green boughs fell to the ground under the rapid strokes of figures dimly seen up in the trees, those below seized branches and waved them about their heads, loudly cheering the woodmen in their task. When the work of "lopping" was done, those who had been engaged in it joined the crowd below, and, each man carrying a green bough on his shoulder, an impromptu procession round the cleared space was organised, the mass of foliage moving in the moonlight suggesting a fresh visit of Birnamwood to Dunsinane. Amid the cheers there rose a cry of "Bonfire! Bonfire!" and in a twinkling the lopped branches were piled in a heap on the ground, and, willing hands bringing heaps of dried Fern, a fire was lit, to which the green wood slowly yielded. As the fire spread and grew strong, the boughs were piled up higher and higher, and at one o'clock on Tuesday morning Staple Hill announced to all residents in the surrounding neighbourhood who were awake and chanced to look that way, that the estovers rights of the people of Loughton had been preserved for another year.—*Daily News*.

GARDENING IN PERSIA.

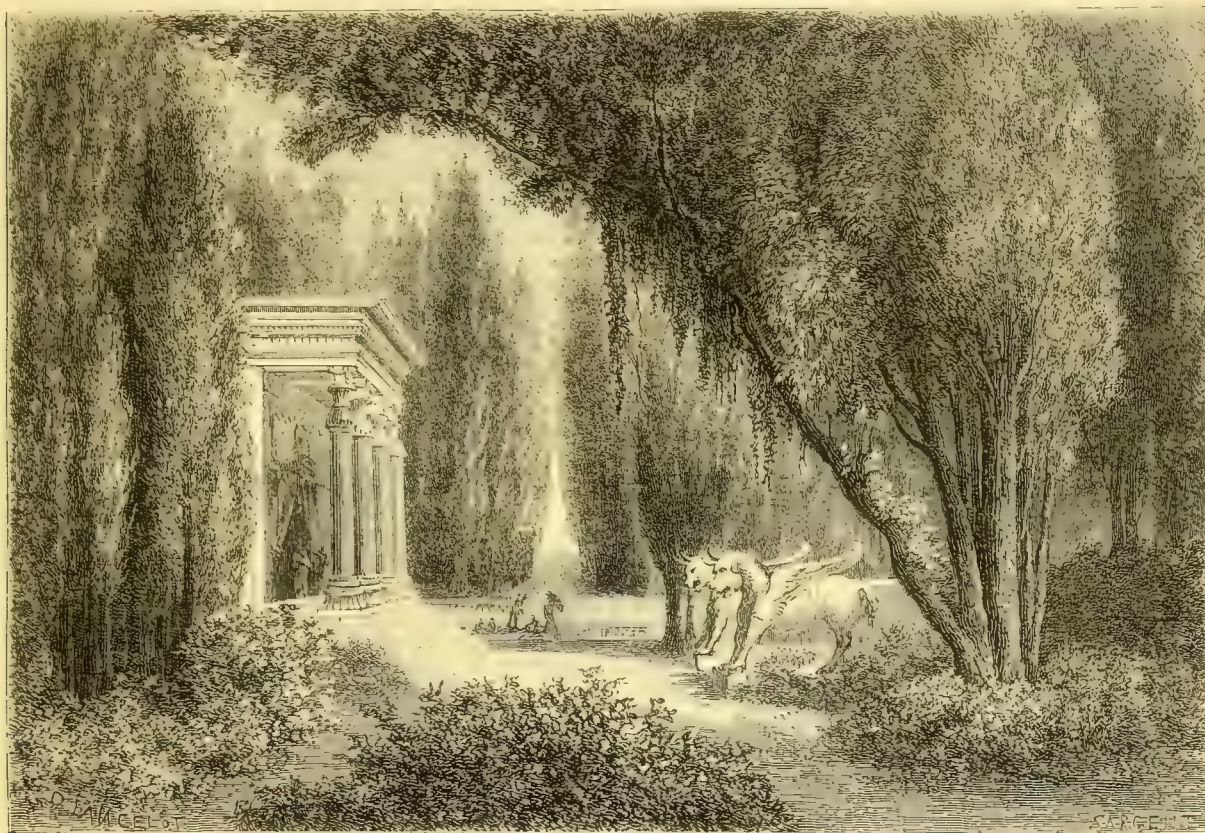
XENOPHON'S description of the parks of the Persian monarchs of his time (about 400 B.C.) is well worth a moment's consideration. The first park of which he speaks was simply a royal "chase," like our own New Forest or "Sherwood's green expanse." At the same time we cannot forget the passage of Plutarch in which he records that, when the Spartan general Lysander visited Cyrus at Sardis, and praised the arrangement of his grounds, the Persian king was pleased to inform him that he had himself planted and laid them out. We have no details of the appearance or arrangement of this park at Sardis, nor of the greater park at Celæne, in which Cyrus reviewed the Greek auxiliaries prior to the memorable "Anabasis." Both are mentioned under a name equivalent to the English "paradise," and from the descriptions of Pliny and other Roman authorities, we may suppose that there was, even in that early age, some attempt at effect in the planting of shrubs

SOILS, FERTILISERS, &c.

ON THE CAUSES OF FERTILITY OR BARRENNESS OF SOILS.

(Concluded from p. 401.)

WE have now to consider how far the general results of analysis, hitherto made, have benefited the practical farmer. Certain soils having been found peculiarly adapted to the growth of some plants and unsuitable for others, analysis ought to point out the reason for these peculiarities, and to a certain extent it has done so. But inasmuch as fertility or barrenness depends upon the state of combination in which the ingredients exist, quite as much as upon the actual existence of the various salts, and as analysis hitherto has generally been confined to pointing out this latter fact only, we ought not to feel surprised that chemical returns have often failed to bear out practical facts. Again, we should bear in mind that, although we may in the laboratory prove the existence of the elements of fertility,



A Persian Garden (from Mangin's "Les Jardins").

and flowers, as we learn that they arranged them in straight lines and regular figures, and that the walks were edged with tufts of Roses, Violets, and other fragrant plants. Amongst the trees employed were various kinds of Pines, Cypress, Laurel, and the narrow-leaved Elm.

Persia, too, has long been celebrated for its fruits. The native poets have made famous the produce of each district. Ispahan boasts the best flavoured Melons, Nishapour the largest Water Melons, Holwan the most luscious Figs, Kirmanshah the best Apricots, and Shiraz the finest grapes. Undoubtedly Persia has a good right to boast. We owe to her many of our finest and most favourite fruits, and she still devotes more care than any other eastern nation to their culture. The Melons of Ispahan are tended with the greatest attention. In the best gardens they are placed on tiles, and turned round several times a day, in order that each side may ripen equally in the heat of the sun. The result is that they probably excel in flavour any Melons in the world.

and demonstrate their mode of action, yet these facts may be falsified in the soil, owing to the presence of other forces of which chemistry cannot take account. Professor Way has shown that a crop of Wheat takes a very small quantity of mineral matter from a soil, and that many soils contain abundant supplies for a number of crops, yet in practice we can never take more than one crop in succession without injuring the land and weakening the produce. It is found that those very substances which analysis shows already existing in abundance, if added to the soil, produce good results. The reason for this discrepancy is doubtless owing to the particular state of combination as affecting the solubility or insolubility, and the fact that the roots of the crops come into connection with only a portion of the fertilising ingredients. The chief value of analysis hitherto has consisted in pointing out those substances required as food for particular crops, their presence in or absence from the soil, and the cheapest form and best method of application when deficient; also in determining the relative value of the various manuring substances so constantly offered to the practical man, in discovering valuable manures in the refuse of manufactures which would otherwise be

wasted, and in the discovery of fossil or earthy manures. Considering, therefore, that the science of agricultural chemistry is still in its infancy, the opinion that it has hitherto conferred no benefit upon agriculture is most unjust, and can only proceed from ignorance. We are already indebted to it for a general enlightenment as to the principles of vegetable life; and though at present it may not have produced very startling results, still it has opened up so many new views, that every man of sense will feel grateful for its assistance, and look hopefully forward to the future. We proceed to give the analysis of a few soils of various kinds, commencing with that of a clay soil, from the upper oolite formation, near Cirencester, by Dr. Voelcker:—

Water driven off at 112 degrees	5.53
Insoluble matter (clay)	84.10
Oxides of iron and alumina sol.	3.07
Organic matter and water of combination	3.62
Carbonate of lime	7.74
Magnesia	1.60
Potash	1.26
Soda	1.22
Phosphoric acid	1.38
Soluble silica	1.45
	99.97

In this analysis we are struck with the very minute quantity of the soluble in proportion to the insoluble matters, and might hastily judge such a soil to be very sterile, an erroneous conclusion, of which we shall at once be convinced if we bear in mind the very minute quantity required for each crop. Professor Way, who has paid great attention to this subject, informs us that the total weight of soil removed from an acre of ground by an average Wheat crop only amounts to 277 lbs.; twenty crops taking 5,540 lbs., or 248 per cent. of the whole soil. He gives the following tables:—

	One Crop.	Twenty Crops.	Percentage of Soil removed by 24 Crops.
	lbs.	lbs.	
Silica	170	3,400	152
Phosphoric acid	30	600	1027
Sulphuric acid	8	160	1007
Lime	16	320	1011
Magnesia	10	200	1009
Potash	40	800	1036
Soda	3	60	1003
	277	5,540	248

The following is the analysis of a calcareous soil from Gloucestershire:—

Lime	52.33
Magnesia	1.31
Oxide of iron and alumina	2.86
Phosphoric acid	Trace
Sulphuric acid	Trace
Silica	26
Carbonic acid	44.70
	100.46

Analysis of barren and fertile sands:—

	Barren.	Fertile for Lucerne, Sainfoin, and Lupins.	Fertile for Beans and Peas.
Silica	93.000	91.700	90.220
Alumina	5.00	1.500	2.106
Oxides of iron	2.000	2.000	3.951
Lime	1.001	1.000	1.530
Magnesia	Trace	Trace	7.730
Potash	Trace	1.100	1.076
Soda	Trace		
Phosphoric acid	Trace	Trace	3.367
Sulphuric acid	Trace	Trace	Trace
Oxide of manganese	None	None	9.960
Chlorine	None	None	0.010
Organic matter	1.499	5.500	1.040
	100.000	99.900	99.990

The above analyses of sandy soils are instructive. The first, that of the barren sand, contains, besides insoluble matter, only $\frac{1}{2}$ per cent. of alumina, a quantity quite insufficient to have any mechanical influence; 2 per cent. of iron, probably as peroxide; $1\frac{1}{2}$ per cent. of humus, and only traces of the most important substances. The second soil is designated as sandy loam, said to produce luxuriant crops of Lucerne, Sainfoin, and Lupins; facts which the chemist could hardly have anticipated, as it only differs from No. 1 in containing 1 per cent. of lime and 1 per cent. more alumina, and a small portion of alkalis. The third analysis is of a soil growing fine Pulse crops; and here we have indications of more fertility in the presence of appreciable quantities of phosphoric acid and magnesia, though

there is nothing which would lead us to expect the soil anything but poor. These analyses were made by Sprengel, and are not of very recent date, consequently we do not feel such confidence in their accuracy as if conducted on the modern system; indeed little reliance is to be placed upon any old analysis of soils. The fertilising materials are often in such minute quantities, yet sufficient for the requirements of the crop, that they totally escape detection, or can only be represented by a trace; and it may be the variation in the amount of the latter which causes the remarkable difference of fertility in the two first soils. The limit of variation in the best conducted analysis is often equal for some substances (phosphoric acid for example) to the total quantity in the body analysed, consequently in such cases little reliance can be placed on the result. The reagents employed are not always perfectly pure; the very substances we are looking for may be introduced, and a trace indicated in cases where the soil was quite destitute of it. We are more likely to arrive at correct conclusions as to the deficiencies of soils and the requisite materials to add, by studying the composition of the crops which flourish or will not grow upon them. In the ashes of plants we have a much more concentrated mass to work upon; the soluble portions are not diluted or dispersed, as in the soil, amongst a large mass of insoluble matter, and consequently our analysis, as proved by the similarity of result in different specimens of the same kinds, will be much more worthy of credit.

Effect of Depth of Soil on Vegetation.

The deeper a soil is, or can be made by good tillage, provided it contains the elements of fertility, the more productive it must become, not only by causing a large supply of actual food, but also by presenting an increased surface for the action of chemical forces to retain those valuable substances, which being in solution would otherwise pass away in the sub-soil, where, though they might be retained, the roots could not get at them. The atmosphere penetrates more freely, warming and exciting the whole mass; the roots instead of merely throwing out laterally, and creeping along just beneath the surface, as in shallow soils, push boldly out in all directions in search of food, and thus strengthen the plant. It is our belief that the Wheat crop requires a deeper soil than is generally thought necessary, and that root-fall is often due to the lateral direction into which the roots are forced by the impassable pan a few inches beneath the surface; at the same time the surface should be made as firm as possible, for there is no doubt that the Wheat crop likes a firm, though, not a shallow bed. How often we see cases of surface-rooted trees, such as Lime or Beech, being blown up by the wind, roots and all, while the deep-rooted Oak stands firm! The great use of the modern cultivators, so generally employed in fallowing operations, is to stir and lighten up those portions which, too deep to be reached by the plough, are yet pressed down by its weight passing over them. The alluvial tracts so frequently found surrounding our principal rivers, are all deep and very fertile; though generally dry, they never suffer from drought, owing to their powers of absorption, both from the air and sub-soil. Depth being so important, we should do all in our power to increase it by artificial means when required; as frequent ploughing at a uniform depth produces even in the deepest soils a hard bed, through which neither roots, air, nor moisture can readily penetrate, the use of the sub-soil plough, once in each rotation, generally after the first ploughing of the stubbles for the fallow crop, is strongly recommended. Where the sub-soil consists of a stiff yellow clay, care must be taken not to bring up too much at once; for else, being of a poisonous nature, it would injure the land for some time, until in fact the oxygen of the air had effected the necessary chemical changes, and sweetened the mass. Deep soils are much less injured by sudden changes of weather than shallow ones, for being open and friable, the rain-fall passes slowly through them, and after nourishing vegetation disappears in the sub-soils; and during a dry time they maintain their moisture, owing to powers of absorption and capillary attraction. Many of the most fertile loams, resting upon a gravelly and very porous sub-soil, owe their fertility to depth. The same rule holds good with soils resting on chalk or limestone; they are rich or poor according to depth. Therefore it is evident that in farming, besides the mere routine of preparing the ground for the crop, we have the important business of deepening the soil to attend to. Draining, in all cases where the land requires it, will be found a most important assistant, lowering the water level to the bottom of the drains, some 3 or 4 feet from the surface, enabling the atmosphere, that great fertiliser, to penetrate into the crevices formerly filled with moisture, and by diminishing the tenacity, lessening the difficulties of deep cultivation.

In cases where porous soils rest upon stiff sub-soils occasional sub-soiling, by bringing to the surface much valuable matter, which had passed through, will be found equal to a dressing of manure. In the case of clay soils, we are often enabled by deep cultivation to

ensure a supply of those mineral substances so essential to vegetation, but which are naturally in an insoluble state, requiring the action of the air and rain water to reduce them to an available condition for the wants of plants. The only caution required, as was before mentioned, is to avoid bringing up more of the sour sub-soil at a time than the winter's frost and rains can fertilise, and always to plough deepest in autumn for the fallow crop; for the frequent stirrings and mixings, which the soil receives for the fallow, whether bare or green, will tend to fertilise, and prevent any injurious effects which might otherwise follow. The way in which the stubbles are managed on a clay farm is a good criterion of the ignorance and poverty, or the intelligence and capital, of the occupier; if horses are short, they are left untouched till spring, and all the benefits of winter frost, &c., lost; indeed, I have met with men who professed to agree with such a system, and argued against the autumn ploughing, as being injurious to the land. It is possible that, in a peculiarly wet season, we should do more harm than good by attempting to plough; but such cases will be found very rare, and the intelligent man who understands the value of his winter ploughing, will generally find his opportunity. Then again, the slovenly manner in which the work is often hurried over, "because it is only the stubbles and does not matter," is a proof of the ignorance of principles which exists among many so-called practical men. The autumn ploughing of stubbles for the fallow crop is the most important operation of the whole rotation, and the succeeding crops will greatly depend upon the way in which it is done. We should aim at quality rather than quantity, ploughing as deep as the soil will allow, without bringing up above an inch or two of the sub-soil; holding small furrows and laying them up at a considerable angle, so that rain will not remain long on the surface; laying out the field into convenient-sized lands, higher or lower, larger or smaller, according to the tenacity of the soil; carefully crumbing out the furrows, and making proper grips to carry off the excess of water consequent on heavy winter rains. By such means we insure the soil receiving all the benefits which the changes of weather can produce; the atmosphere will penetrate, because we have taken precautions to allow of the moisture getting away; the soil must become pulverized, and will be ready to work in the spring much sooner than land untouched, which, lying flatter and with no surface drainage, will most likely have remained saturated with moisture all winter, and will turn up raw and stubborn, at the very time that the autumn-ploughed may be ready to receive a crop. The practice of deep ploughing is happily on the increase, and its importance seems now generally recognised by all the best farmers, yet it is lamentable to see with what fatal attachment a large class still adhere to old customs and prejudices. The practice of Mr. Smith of Lois Weedon, though not of a nature to be followed on the large scale, has been of extreme value in pointing out the immense advantage of deep cultivation on all soils containing any considerable quantity of clay. It seems only extraordinary that in these days of cheap publications and railway communication, it should be necessary to point out and reiterate facts which appear so self-evident to every candid observer. Depth of soil ought to be one of the desiderata of the farmer, and yet, with the means so frequently in his own hands, he ridicules the idea of making use of them.

Warmth or Coldness of Soils.

The temperature of a soil is a most important condition, since vegetation is increased, checked, or actually retarded, according to the warmth or coldness of the soil; to be convinced of this we have only to compare crops growing on wet undrained clay, which we find starved in appearance and yielding a wretchedly small produce, with the luxuriant dark-coloured shoots made in a dry, well-cultivated soil. Warmth is dependent upon dryness, porosity, and colour. Clay soils are cool, even when well drained and cultivated; in a natural state they are very cold. This is due to their cohesive property keeping them moist, preventing the sun's rays from penetrating, and the evaporation constantly going on from their surface. It has been proved that water evaporated from the soil extracts for the same volume an equal amount of heat as when converted over a fire into steam. When we remember that it requires six times as much heat to convert a pound of water into steam as to raise the same from 50° to the boiling point, we can form some idea of the coldness of a soil constantly full of moisture. Water possesses little or no conducting power, and therefore keeps a soil cold by preventing the heat descending; it also radiates heat more rapidly than the soil itself, and, owing to its peculiar laws of density, may farther reduce temperature by changing places with the warmer water below, until the whole mass is reduced to 42°. By draining, we entirely alter all this, converting the water into a carrier of heat. The rain-water, often warmer than the soil, especially in winter, instead of evaporating from the surface, passes slowly downwards, supplying the wants of vegetation and increasing the temperature by giving

up a portion of its own heat to the surrounding soil. If the rain is cooler than the soil, which is generally the case in summer, it abstracts heat from the surface, giving it up again to the sub-soil, and thus equalising the temperature of the whole mass. The experiments of Mr. Parkes are very valuable, as showing the important part free circulation of water plays in regulating the temperature of the soil. For the benefit of those who may not have the opportunity of studying his valuable paper, I may be pardoned for briefly alluding to them. The site chosen was a peat-bog in Lancashire, his object to determine the temperature of both surface and sub-stratum in the natural semi-fluid state, and after drainage and cultivation. His observations were conducted by means of thermometers placed in the soil at various depths. In the natural peat, the depth of which was 30 feet, he found that during the whole time of his experiments (nearly three years), with only one exception, the temperature from 12 inches below the surface to the bottom of the bog, was uniformly 46°. The exception took place during the winter of 1836, when the thermometer nearest the surface fell for a few days to 44°. Into the cultivated portion, which had been thoroughly drained, ploughed, and dug deeply, five thermometers were inserted at the following depths—7, 13, 19, 25, and 31 inches. The experiment only extended over twelve days, the examination being made twice a-day, at 9 a.m. and 2 p.m.; the result was a very different temperature for each depth, greatest and most variable at the surface, least and most regular at the greatest depth, where the temperature only varied during the whole time from 46° to 48°; while that at 7 inches varied from 52° to 66°, was always highest at 2 p.m., and appeared to vary according to the temperature of the air. The second bulb, 13 inches from the surface, ranged from 50° to 57°; the third, at 19 inches, 48.4° to 52.8°; and the fourth, at 25 inches, from 47° to 50.2°. These experiments speak for themselves, and will afford a ready explanation of the otherwise marvellous effects which often follow thorough drainage. The increase and variety of temperature could alone be due to the removal of excess of water, and consequently permeating influence of rain-fall, atmosphere, and sun's rays.

Loamy soils and sands are warm, from their dryness, porosity, and colour. Chalks and limestones are cooler, their light colour rendering them bad absorbents and good reflectors. All soils radiate the heat received from the sun's rays back again into the atmosphere as soon as the latter cools down to a lower temperature, but in different degrees depending upon the state of mechanical division, colour, &c.; that soil ought to be warmest which absorbs most readily and radiates most slowly, and this is the case with sands. The formation of dew is connected with this radiating power; the soil giving up its heat, becomes cold, and lowers the temperature of the stratum of air immediately above it, causing a portion of the moisture which it contained in a state of vapour to be deposited as dew. But this very deposit of dew, being a conversion of steam or vapour back into water, is attended with the liberation of considerable heat, which probably helps to make up for the loss by radiation. We only see dew after still clear nights, because the clouds radiate back and so keep up the temperature of the soil, and wind acts in the same way.

We can easily test the relative powers of different soils to retain heat by subjecting portions to a strong heat, noting how soon they lose it again. Sand by such means has been found to retain heat for the longest period; clays stand at about 65 to 70 in comparison to sand at 100; humus only at 49; this power appears to bear a close relation to the weight of a soil. The power of becoming warmed by the sun's rays, which is another cause of the temperature of soils, appears to depend upon colour and dryness; the darker the soil is, the greater its powers of absorbing heat.

Thoroughly dry soils, whatever their colour or nature, though varying in temperature, are never cold. Moisture being the principal cause of low temperature, we often have the remedy in our own power; thorough drainage by diverting the water that previously clogged up the pores of the soil, and was continually evaporating from the surface, into new channels by which it is carried directly to the ocean, not only warms and invigorates the particular case, but assists in improving the general climate of a district, by rendering it drier, and removes the seeds of those rheumatic diseases so prevalent and fatal in former times.

Necessity or Otherwise for the Presence of Vegetable Matter in Soils.

That vegetable life is capable of existence in the absence of decayed humus, is proved by the growth of the lowest forms of vegetable life in the crevices of bare rocks. That the decay of these, by adding humus to the disintegrated rock, greatly assisted in the subsequent fertility of the soil, is beyond doubt, and we may conclude that soils would lose much of their fertility from the total absence of vegetable matter, supposing such a thing possible, which it is evident could not be, when we consider the origin and gradual

formation of all soils. The dark colour of soils is in general due to the presence of vegetable and animal matter; such soils are always more fertile than white, light red, or brown soils, consequently it is fair to presume that the fertility is due, at least in part, to the presence of vegetable matter. The advantages which follow heavy applications of vegetable manures, such as sea-weeds, &c., are a further confirmation of this. From the fact of vegetable matters existing in all soils, it was supposed in earlier days of scientific investigation that the amount of humus determined the relative value of soils—an erroneous conclusion, as many of the most valuable soils only contain from 2 to 3 per cent., while peats, containing from 80 to 90 per cent., are often quite barren. Humus is decomposed vegetable matter, and its nature and qualities depend upon the circumstances under which the decay was conducted: thus brown peat is usually the result of decay under water, whereas black peat has been formed by free oxidation, and is much more valuable or rather less acid and noxious in quality than brown peat. The researches of some foreign chemists, especially Mulder, have shown that the changes which vegetable matter undergoes in the presence of oxygen are numerous and peculiar, consisting in the formation of a succession of organic acids and the elimination of a portion of carbonic acid, until, if the process be carried out, the last of the series resolves itself into carbonic acid and water. Mulder believed that each of these acids, uniting with lime or alkalies, was suitable food for plants, being decomposed in the cells of the plant, thus affording unlimited supplies of carbonic acid and oxygen. Chemists, however, are now generally agreed that such views are erroneous, and confine the value of peat in the soil to its power of absorbing heat and ammonia, and supplying by gradual decomposition carbonic acid, and possibly small quantities of ammonia or nitric acid; qualities which are undoubtedly of great importance, but which cannot render a soil fertile unless proper mineral matters are present. I believe it is not at all certain whether ammonia is produced during the changes which humus undergoes. It has been thought possible that the nitrogen of the atmosphere may, under certain circumstances, unite with the nascent hydrogen, set free from combination with carbon and oxygen. The following analyses of fertile and barren peats are taken from the article on Soils, in "Blackie's Encyclopædia," and are by Mulder and Sprengel:—

	MULDER.		SPRENGEL.			
	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.
Organic matter and combined water ...	12.000	12.502	10.90	16.70	37.00	90.44
Potash ...	1.026	1.431	...	...	Trace	...
Soda ...	1.972	2.069	...	...	Trace	...
Ammonia ...	0.060	0.073	...	...	Trace	...
Lime ...	4.092	6.096	1.00	1.13	3.2	5.5
Magnesia ...	1.130	1.140	2.0	0.3	3.1	0.8
Peroxide of iron ...	9.039	10.315	6.30	6.4	5.2	1.2
Protoxide of iron ...	3.50	5.63	...	...	...	...
Protoxide of manganese ...	2.28	3.51	...	...	...	...
Alumina ...	1.361	2.576	9.30	7.8	4.5	6.3
Phosphoric acid ...	4.66	3.24	1.3	1.1	Trace	0.2
Sulphuric acid ...	8.96	1.104	1.7	0.2	Trace	1.9
Carbonic acid ...	6.085	6.910	...	...	...	...
Chlorine ...	1.240	1.382	Trace	0.1	Trace	Trace
Soluble Silica ...	2.340	2.196	71.80	81.50	61.57	7.96
Insoluble silica (clay) ...	57.615	51.706	...	...	...	...
Loss ...	1.006	935	1.19	0.2	...	...
	100.000	100.000	100.00	100.00	100.17	100.00

Nos. 1 and 2.—Fertile soils of a tract of land in North Holland, gained by embankment from the sea.

No. 3.—Rich vegetable mould, near Wager, in Germany, flooded by the river.

No. 4.—Poor sandy mould, near Brunswick.

No. 5.—Very infertile peaty soil, near Aurich, in East Friesland.

No. 6.—Boggy sterile lands, near Giffhorn, in Germany.

We hardly require reference to the foot-notes. A glance at the relative proportions of those mineral matters which have been spoken of as necessary to vegetation, would at once point out the fertile from the barren soils. The analysis appeared worthy of insertion, as bearing out what was stated above, that the presence of vegetable matter alone cannot ensure fertility. The three last soils would all be capable of great improvement by the addition of large doses of lime, calcareous gravel, or marl; and in cases where such soils rest upon or lie adjacent to a calcareous substratum, such mixtures will be practical, and prove in the end very remunerative. The presence of a small percentage of vegetable matter seems requisite to ensure a fertile soil, and for general cultivation is perhaps better than a larger proportion, since cereal crops generally do not flourish in the latter case, probably owing to the absorption of too much carbon in proportion to silica, making the straw soft and flaggy and unable to bear the ripening ear. Peat

bogs that have been reclaimed by draining and marling, are found better adapted for pasture than arable farming; the most approved method of management being to cultivate for the first few years till the humus is thoroughly decomposed, and then lay down with permanent Grasses, the feeding of which firms the land and in time produces a valuable herbage. In most soils we find a deficiency of vegetable matters, and the farmer is anxious to supply as much as possible, in the form of farm-yard manure, sea-weeds, and decayed rubbish of all sorts; such manures act as direct food and mechanically in keeping the soil open. We should strongly advocate the occasional application of small dressings of lime between the manurings, because it would come into contact with undecomposed portions of manure—humus, in fact, which otherwise might lie dormant in the soil—causing the formation of a further supply of carbonic acid for the roots of plants.

SALT AS A FERTILISER.

PROFESSOR JOHNSON, author of "How Crops Grow," gives a useful reply to a correspondent of the *Tribune* who seeks information on this point:—As to the quantity of salt that may be applied per acre, that depends upon the crop and the climate. On Asparagus, several hundred bushels may be used without harm. On Sugar, Beets, and Tobacco, large applications will often promote growth, sometimes wonderfully; but the Beets will not yield their sugar, and the Tobacco will not make good smoke. On grain crops, 5 to 15 bushels per acre, and in England, larger quantities have been used. More can be safely employed in moist climates or seasons than in dry. Ten bushels is perhaps the happy medium adapted for an experimental trial. So much for the quantity that "can be used per acre." Now, something more as to how much may be used "with benefit." Salt acts upon the crop, for the most part, in an indirect manner. It does not contribute greatly to the growth of plants by its own elements, sodium and chlorine, neither of which are needed by agricultural plants in much quantity. It is therefore frequently of no perceptible advantage. Sometimes, however, a moderate dressing produces remarkable effects. In the soil, salt, like most saline fertilisers, is capable of working chemical changes that may be useful to a crop. It dissolves or displaces one or more elements of nutrition from combinations which the plant cannot overcome, and renders them available. This fact has been demonstrated by numerous chemical investigations. Heiden, Peters, Jones and Frank, have each made comparative trials on various soils as to the kind and amount of matter dissolved from them by a given quantity of weak salt solution, compared with that dissolved by pure water. The results differ according to the soil experimented upon, but the general fact is that salt considerably increases the solvent powers of water for lime, magnesia, potash, oxide of iron, and humus, especially for the two first named. It is plain, then, that certain soils may give better crops for a dressing of salt, because the salt by its indirect action is equivalent to an addition of lime, magnesia, or potash. If, however, these are sufficiently supplied by the soil itself, the addition of salt is a detriment, because it makes these elements soluble, only to be washed out by the rain. When we have a deep and heavy (clayey or loamy) soil, which contains at a depth below the reach of tillage stores of plant-food which are too slow in becoming of avail to crops, we can use salt to make them more speedily serviceable; we can in fact manure the sub-soil indirectly by its application to the surface. The fact that the ocean is so salt; that in other words, three-fourths of the matter dissolved in it are chloride of sodium, shows that soils leave little retentive or absorptive power for the elements sodium and chlorine. Direct experiment confirms the fact that of all the saline compounds found in the soil-water, common salt is one which is in general least fixed or absorbed by filtration through earth. By virtue of this solubility it is adapted to penetrate parts of the soil where no tillage can upturn, and where no manure can be put, and by its chemical action there, to feed the long-rooted plants, like Clover, Beets, &c., which otherwise might be insufficiently nourished. These remarks upon its mode of action are made to explain the fact of practice that salt more often gives no result than a good one, also to show under what circumstances it may be advisable to try it, and to make evident that our knowledge of the conditions that govern its working is so incomplete that experiment alone can be depended upon to determine whether it will operate advantageously in any given case. "Fish salt" is neither better nor worse than ordinary salt.

Is Fool's Watercress (*Sium nodiflorum*) Poisonous?

—Can any of your correspondents inform me if this is really poisonous? It is, I believe, generally considered so, but as I have lately seen its leaves frequently mixed with, and sold for, Watercress, I believe it must be often eaten.—J. D. M.

THE INDOOR GARDEN.

ROSEATE MAIDEN-HAIR FERN.

(*ADIANTUM RUBELLUM*.)

Most Ferns are remarkable for their fresh greenness, but several of the Maiden-hair kinds are delicately tinted with dark rose or rosy-purple. *A. rubellum* is one of the most ornamental in this respect, its delicate fronds being richly tinted with a roseate hue, which is all the more apparent when contrasted with other forms of the *Capillas veneris* section to which it

PECULIAR GROWTH OF *CYATHEA BURKEI*.

In your remarks upon this handsome Tree-fern (see p. 271) one thing would seem to have escaped your notice. We have a large stock of this Fern here, and in every specimen the same peculiarity occurs, therefore, I am fully convinced that it is not accidental. In all the other Tree-ferns which I have examined I find the fronds are produced in a spiral manner, the basis of the fronds, or the scars left by them, enabling anyone to trace their growth and to see how the stems are built up. In *Cyathea Burkei*, however, the case is quite different, for instead of the spiral growth, each new frond comes up exactly above the old ones, thus causing a peculiar furrowed appear-



Roseate Maiden-hair Fern (*Adiantum rubellum*)

belongs. As will be seen by the accompanying illustration the plant is dwarf and compact in habit; and its elegantly tinted fronds, which are produced in abundance, vary from 6 to 8 inches in length. It is a native of Peru, and to Messrs. Veitch & Sons, of the Royal Exotic Nursery, Chelsea, we are indebted for its introduction to our collections. It grows well in a cool Fernery, or anywhere where there is a very moderate temperature. Its culture is as easy as that of other Maiden-hair Ferns, and should be treated to fresh fibrous peat and sand, together with a moderately humid atmosphere, and a liberal supply of moisture at the root, when growing. B.

ance totally distinct from that of any other Fern stem which has come under my notice. It may be that I am placing too much importance on this matter, but the circumstance is so extraordinary and the appearance caused, so peculiar, that I think it worthy the attention of all interested in such matters. W. H. GOWER.

Victoria Nursery, Upper Holloway.

The showy berry-like fruits of the common Gladwyn (*Iris foetidissima*) may now be seen in Mrs. Johnson's shop in the Central Row, Covent Garden. They are sold for use in house and table decoration, and are very effective when mingled with Grasses and similar plants

THE CAUSE OF THE GREEN COLOUR OF LEAVES.

THE most superficial observer cannot fail to have noticed, whilst passing through the cultivated districts of this country, that the growing crop on one part of a field is sometimes of a light green, whilst that on another part of the same field, sown at the same time, with the same seed, is of a much darker colour. Those who more carefully examine this phenomenon will discover that this dark green is most frequently produced by a supply of nitrogen to the roots of the plants, and will probably ask themselves the question whether this colour is, as Liebig asserts, an abnormal development of leaf to the injury of the plants, or whether it indicates a healthy vigorous growth which would produce a heavy crop? It is asserted by most farmers that "like colour so crop," and in the published results of experiments with manures by Messrs. Lawes & Gilbert, of Rothamsted, the correctness of this theory is clearly shown; but as their writings are not studied by many, I will give the result of a few simple experiments which I have made, that I may the more clearly prove this point. In the first of these I grew Barley plants in two saucers supplied with ordinary well-water; to one of these I added a few grains of nitrate of soda. This produced no visible increase of colour in the plants to which it was applied; thus showing that the nitrogen contained in nitrate of soda will not produce any more colour in the plants unless they are provided with the other elements which they require. In the second experiment Barley was grown in four pots filled with almost pure sand, to the first of which no manure was applied. To the second I added 5 grains of nitrate of soda, which contains as much nitrogen as the Barley could require. In the third pot I placed 10 grains of wood-ashes, which would supply all the inorganic substances necessary for the plants. In the fourth I placed both the 5 grains of nitrate of soda and 10 grains of ashes; thus providing the plants in this instance with all the requisites to a healthy vigorous growth. When the Barley in this last pot had reached the height of 5 inches, and those in pots one, two, and three were all about 3 inches above the soil, they were destroyed by drought, but a note taken before that time states that the colour of the plants in pots one, two, three was nearly the same, but those in pot four were much darker. In this experiment, therefore, the richest green was obtained in the pot which produced the greatest growth. The third experiment was a repetition of the second,—the same sand, manures, and seed being employed, and in the same proportion as in the last experiment. After a little more than a month's growth, the Barley in pots one, two, and three was about 3 inches in height, and in each of an equally light green tint, while that in pot four was 7 inches above the soil and a dark luxuriant colour. It appears, therefore, that the formation of Chlorophyll is in some way directly connected with healthy growth, and is not produced by nitrogen, unless there be a sufficient supply of mineral matters to the roots.

We also know that the green colour of plants depends on light. This may be easily proved by growing some Mustard in two pots, one exposed to light, the other placed in the dark; and you will find that those which have been grown in the dark will be of a pale yellow, but those exposed to the sun's influence of a dark green; thus showing that the effect of manures, in producing this colour, either depends on, or influences, the action of light, for without the solar rays the colour cannot be formed. This naturally leads to the inquiry—what is the chemical action of light? We know that the leaves of plants absorb carbonic dioxide, which, under the influence of light, especially direct sun-light, is deoxidized, and the carbon, combining with the substances absorbed by the roots, forms the organic compounds of which the plant consists. This only takes place in light: it therefore appears that light exercises a deoxidizing influence. If this be true, it ought to be prejudicial to all chemical actions in which oxygen is absorbed, especially if the substance undergoing oxidation be carbon or any carbonaceous compound. The action which takes place in germinating seeds is one of oxidation; the starch they contain combines with oxygen absorbed from the air, forming sugar, and carbonic dioxide is liberated; it is therefore an action of oxidation to which light, if it has a deoxidizing influence, ought to be injurious. To satisfy myself that this is the case, I have made several experiments with light, and various seeds placed on moist cotton wool, in all of which those kept in darkness, although their temperature was lower, grew more quickly than those exposed to light. In one of these experiments I carefully measured, when at a certain stage of development, both the plumule or stem and the radicles or roots of the sprouting plant. The average of those placed in the dark was,—the plumule $\frac{3}{4}$ inch, the radicles $1\frac{1}{4}$ inch; of those exposed to light the result was, that the plumule was not visible and the radicles only just emerged from the seed. The growth of Fungi depends on their power of oxidizing the organic substances on which they grow and exhaling carbonic dioxide. Light, therefore, ought to be injurious to them, and we know that they prefer the shade to the sunshine, and always, I believe, come out of the ground in the night.

If two similar pieces of pasty matter be placed in two cups, and one exposed to light, the other placed in the dark, after a few weeks the latter will be found to be much more thickly covered with mould Fungi than the other.

The effect of light on dyed fabrics is another illustration of its deoxidizing influence. Almost all the darker dyed materials are changed to a lighter colour by exposure to sunlight:—Black becomes blue; blue, green; and green is changed to yellow. The same result is obtained by the action of an acid. In the case of one important dye, viz., indigo, this change has been carefully investigated. This substance is obtained from the almost colourless sap of several species of the Indigofera, a genus of plants which grow principally in warm climates. The leaves of these plants are placed in water and allowed to ferment; a yellow substance is dissolved out, which, combining with the oxygen of the air, becomes deep blue, and under the influence of a deoxidizing agent is again converted into the nearly colourless form. These two substances have the composition represented by the following formulae:—

Blue indigo C₁₆ H₁₀ N₂ O. O.
White indigo C₁₆ H₁₀ N₂ O. H₂ O.

Thus we see that the change of dyed fabrics from blue to yellow and white is one of hydration or deoxidation, and as it is produced by light, it appears that in this case also it exercises a deoxidizing influence. But the most familiar example of the combination of oxygen with carbon is ordinary combustion. Combustion, whether it be of coal, wood, gas, tallow, &c., consists of the oxidation of the carbon and hydrogen they contain; therefore, if my view be correct, light ought to interfere with this process. We know that it is asserted, by those whose fire-places are so situated that the sun can shine on them, that its rays do put the fire out; but as some attribute this phenomenon to ocular illusion, I have attempted to decide the question by some experiments on candles. The first two experiments were conducted rather carelessly, but, as in both these the candle burnt in darkness consumed more tallow than that exposed to light, I was induced to make some trials with greater care. For this I employed night-lights, for, as they burn more slowly, I thought there would be a greater opportunity for light to influence the result. These, after being carefully weighed, were placed, one in each of two equal sized boxes, the lid of one of these being substituted by a glass plate, and equal-sized ventilation holes being bored in each. The boxes so arranged were placed at a window, and after four hours' exposure the lights were extinguished and again weighed. In the first experiment there was scarcely any sunshine; the result, therefore, as far as it was affected by light, was produced by diffused day-light. In these circumstances the night-light in the dark burnt 20 per cent. faster than that exposed. In the second experiment there was occasionally a gleam of sunshine, which apparently influenced the result, for in this instance that in the dark consumed 25 per cent. more tallow than that in the light, which is an increase of 5 per cent., supposed to be due to the injurious effect of the occasional sunshine to which that under the glass was exposed. I regret that, owing to the late cloudy weather, I have been unable to repeat these experiments; for although in five experiments I have obtained a similar result, yet I cannot be confident that it is not due to some extraneous cause of which I am not aware; but if they are reliable, they prove unmistakably that in combustion also light exercises a deoxidizing influence. I have endeavoured to account for this by supposing it to be due to vibration communicated to the carbon by the particles of luminous ether, which convey light. To illustrate this, let us imagine two balls, one to represent carbon, the other oxygen. The light impinging upon the carbon balls puts it in a state of vibration, thereby hindering its combination with the oxygen.

Having then shown that the action of light is one of deoxidation, we will proceed to examine its effect on Chlorophyll. We know that in autumn, when the flow of sap to the leaves is arrested, their colour is changed to yellow. That this is the result of the action of light may be proved by two simple experiments. If two green leaves be pressed, one in the dark, the other under glass, that in the dark will remain almost the same colour, whilst that exposed to the influence of light will be turned yellow. If an alcoholic solution of Chlorophyll (produced by placing bruised leaves in spirits of wine) be poured into two test-tubes, and one be exposed to light, the other being placed in the dark, that in the latter will retain its beautiful green colour, but in the tube in the light the colour will be changed to a yellow. The effect of light on Chlorophyll, therefore, is to convert it to a yellow substance; and that this change is one of deoxidation may be shown by placing a drop of acid on the leaf. We know that the action of a strong acid on organic substances is to deoxidize them, and we see that, as we might have anticipated, it turns the portion of the leaf on which it was placed to the same yellow colour as is produced by light. After this we shall not be surprised to learn that Sachs

attributes the presence of the green substance, or Chlorophyll, to the oxidation of a yellow substance, or Leucophyll, which has been formed by the plant; and if we compare this theory with the process which we have seen goes on in the formation of the blue from the white indigo, we shall see that the result is in both cases due to oxidation. But we have seen that the tendency of light is to deoxidize the substances on which it impinges; how then is it possible that Chlorophyll should be formed by the sun's influence? In a healthy plant the atmosphere has free access, by means of stomata or pores in the leaf, to all parts of its structure, and we know that, under the influence of light, the carbonic dioxide it contains is deoxidized, the carbon being assimilated but the oxygen liberated. Is it absurd then, to suppose that this oxygen liberated by light from the carbonic dioxide, being in immediate contact with the Leucophyll, should combine with it in producing Chlorophyll? To illustrate this theory let us take the case of the Barley in the pots mentioned above. The plants in pot one, after they had exhausted the supply of mineral and nitrogenous substances supplied by the seed, would attempt to obtain them from the sand; but as sand does not contain these elements, the leaves could only produce substances such as starch and sugar, which consist only of carbon and the elements of water; but as a plant cannot grow without the nitrogenous compounds and those substances which contain the mineral matters, the action of the leaves must soon become very feeble, and very little oxygen be liberated from carbonic dioxide. Light would then commence deoxidizing the Chlorophyll, reducing it to the yellow state. In pots two and three, for the want, in one case, of mineral matter, in the other of nitrogen, the deoxidation of carbonic dioxide would cease, and in the absence of the excess of oxygen light would destroy the colour. But in the case of the plants in pot four, as all the substances essential to their growth were liberally supplied, a rapid absorption and deoxidation of carbonic dioxide was kept up, thereby supplying a large quantity of oxygen for the oxidation of the Leucophyll in the leaves, converting it into the bright green Chlorophyll.—*Hardwicke's Science Gossip.*

THE ARBORETUM.

FINE HAMPSHIRE TREES.

SOME years ago, when at Cadland, the seat of E. A. Drummond, Esq., situated on the south side of Southampton Waters, my attention was directed to a remarkably fine specimen of the deciduous Cypress growing at the end of the lake, in the lower pleasure grounds. The size of this tree very nearly equals that of the one at Syon, although the height is in favour of the Cadland specimen, which is 96 feet, the Syon tree being 84 feet. The trunk, at its base, measures 17½ feet in circumference, and at 4 feet from the ground 12 feet as against the one at Syon, which is 14 feet round at 3 feet from the ground. The first branch is 14 feet up and the stem is very even for a height of 30 feet. The tree is exceedingly healthy, and, like the one at Syon, is growing near water; the age of the Cadland tree is, probably, from 130 to 140 years, and if so the deciduous Cypress must be classed as a slow grower. In another portion of the estate there is flourishing vigorously a fine Oak of very great age, and probably one of the most ancient denizens of the New Forest. Its trunk, close to the ground, measures 28½ feet in circumference, and it is altogether a noteworthy specimen of English Oak. Near the Horns Inn, at Nursling, is a remarkably fine Scotch Fir, growing near the south boundary of the Broadlands Estate, formerly the property of the late Lord Palmerston. This tree is ensconced in a small wood close to the roadside, and is easily found on entering the public footway that runs through the wood. When I last saw it it measured 14 feet round the stem, 4 feet from the ground, the trunk being as round and as smooth as a ship's mast for a height of over 40 feet, where an immense limb breaks out from it. It is estimated to be about 120 feet in height, and has a very massive rounded head; unfortunately it is somewhat hidden by other and smaller trees, but it is, nevertheless, a very striking and handsome specimen, and well worthy a place in any record of fine trees. About three miles beyond Romsey lies, somewhat picturesquely placed near the river Test, Mottisfont Abbey, the fine old residence of Lady Barker Mill. Close to the mansion runs a broad clear stream, a sort of tributary of the Test, and on the banks of this stream, and in front of the abbey are growing some magnificent examples of the Oriental Plane, the largest of which girths round its trunk, at the base, 32 feet, and divides into two huge stems, one measuring 17 feet, the other 13 feet round. The head is of great size, and has a circumference of about 300 feet. It is altogether a grand specimen, and is still most luxuriant and healthy. There are also close by some exceedingly fine examples of the Box tree, which thrives in the moist soil thereabouts with great vigour. The hero of Mottisfont, however, is the grand old Oak

Pollard at Oakley, a small hamlet about half a mile up the stream. This tree has remarkable proportions, for at 5 feet from the ground its trunk measures 32 feet round, and a little higher up are the remains of some huge limbs that have in days long past borne a noble and vigorous head. There is still a young and vigorous growth breaking out annually from these old limbs, and in summer the tree puts on a green freshness that is quite astonishing. All round the base of the trunk is a mass of bark-like protuberances, that look as though at some time or other there had been a sort of woody-upheaval from the roots; the base of the tree is thus rendered of great size. Internally, the trunk is quite hollow, and the space is so great that a dozen men could stand in it with ease. The remarkable vigour in this very ancient tree is doubtless owing to the abundance of moisture near its roots, as it grows close to the stream. Coming now across the county to Cranbury Park, the seat of Thomas Chamberlayne, Esq., which lies directly between Southampton and Winchester, there are to be found some exceedingly fine specimens of the Silver Spruce that tower up to a great height, their tops being conspicuous for many miles round. There are also some grand specimen trees, and a gigantic Portugal Laurel, that has grown and spread until it has now a circumference of about 300 feet. Trees of all kinds thrive most luxuriantly in this part of Hampshire. A. D.

METHODS OF OBSERVING PLANT GROWTH.

IN researches on the growth of plants under constant and varying conditions, it is of great importance to be able to measure this growth with some degree of accuracy. As the increase of length in particular parts is very small, it has been endeavoured, by suitable arrangements, so to magnify it that it becomes perceptible and measurable. M. Sachs has used methods of this kind, his arrangement depending on the principle of the lever with unequal arms, and giving about a twelve-fold magnification. Another method of observation has been devised by M. Askenasy, and recommended by him to the Heidelberg Society of Natural Science. It rests on the use of the microscope. He places roots to grow in glass tubes of suitable width, or in troughs of square section, fixes these under the microscope, and observes the point of the root magnified 80 to 100 times, along with a micrometer, one division of which corresponds to about 1.80mm. in the object. The upper end of the root must be fixed in the tube, for which purpose the friction of the thicker part against the glass mostly proves sufficient. Further, the plant must be guarded against evaporation, and the temperature kept constant. If the arrangements are good, the root-point is seen continuously advancing across the field of the microscope, passing one division after another. M. Askenasy has in this way observed the growth of several roots and also of other parts, so far as it was possible to place them in the tube. There was a very striking regularity of growth, even within short intervals of time, the temperature being constant and evaporation prevented. Thus a Pea root advanced ten divisions in ten to eleven minutes, at a temperature of 17° R. A Maize root took, for the same distance, eleven to twelve minutes. Another Maize root grew more quickly at 20°, the growth past ten divisions being accomplished in 5.8 to 6 minutes. Even within very small time-intervals, the growth takes place in a very regular manner. Thus M. Askenasy determined the number of seconds in which, each time, one division was passed, and obtained for five successive divisions, the values 50, 40, 40, 45, 40. An elevation of temperature immediately accelerates the rate of growth. Thus, a Maize root at a temperature of 16.5° R. advanced six divisions in 290 seconds, or one division in 48 seconds; but after a rise of temperature to 18.5° R., two divisions were passed in 70 seconds, or one division in 35 seconds. From these results I have no doubt that the method described, from its highly demonstrative character, possesses scientific value for the determination of the rate of growth in shorter intervals of time, in order to give fuller knowledge of the changes wrought by temperature and other varied conditions. But, with this view, more extended observations are required; and it will be necessary to point out the numerous sources of error in the method.

The Weeping Beech.—This is a tree of great beauty. Our specimen, 40 feet high, covers an area of 2,000 square feet. Unlike many weeping trees, it grows upward and then throws its branches down in all sorts of fantastic shapes. Looking upon it from the outside, it seems like a cathedral built by one of the old masters of architecture. Enter through its branches, which sweep the ground, you find yourself in a natural arbour. Look up, and you see a sturdy trunk with a bark like a rhinoceros's hide, and supporting limbs twisted and gnarled as if nature were trying to show how picturesque and beautiful so crooked a thing could be. No tree in our grounds elicits so many expressions of wonder and admiration.

I would suggest one employment for the Weeping Beech which would, I think, produce very striking effects. Plant 20 feet apart in an avenue 30 feet wide, trim up in the inside branches 15 or 20 feet, and allow the outside branches to sweep the ground. In this outside wall cut small Gothic openings as high as a carriage window. In process of time, these will be a perfect arcade, dense on the outside, picturesque on the inside, with glimpses of scenery through the Gothic windows.—J. B. PARSONS, *Flushing*.

LABELS FOR CONIFERS.

WHAT is the best kind of labels for a collection of young specimen Conifers? I have tried several kinds, but none satisfy me thoroughly.—F. S. [We gave at p. 156, vol. I., of THE GARDEN a complete account of what we think the best systems of labelling the various classes of plants. For the purpose you mention, Bell's (of Stratford-on-Avon, late Bell & Thorpe) labels are very suitable, and we here furnish an original



sketch, showing a couple of their labels in use. For old-established trees, with big boles, zinc or tin labels, nailed to the tree, are very suitable.]

Destroying Tree-butts.—A New South Wales paper recommends the following method of getting rid of the stumps and roots of timber, in cases where grubbing-up is not considered desirable:—In the autumn bore a hole 1 or 1½ inch in diameter, according to the girth of the stump, vertically in the centre of the latter, and 18 inches deep. Put in 1 oz. or 1½ oz. of saltpetre; fill the hole with water, and plug up close. In the ensuing spring take out the plug, and pour in half a gill of kerosene oil, and ignite it. The stump will smoulder away, without blazing, to the very extremities of the roots, leaving nothing but ashes. The stump must be in a fresh sappy state when the saltpetre is put in, or it will not permeate the fibres thoroughly, which is essential to the success of the experiment.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Jamesia Americana.—As the introducer of this shrub, perhaps you will allow me to explain that its late flowering in Mr. Ellacombe's garden (see p. 366) is quite an exceptional circumstance, the usual period of blooming being July. My largest plants are about four feet high.—W. THOMPSON, *Ipswich*.

Rabbits r. Trees.—A teaspoonful of tincture of asafetida in half a bucketful of liquid clay, mud, or muck of any kind, applied with a brush to the stem and branches of young trees will preserve them from the attacks of hares and rabbits without injury to the trees. Two or three applications during the winter will be sufficient.—B. S.

A Sweet Bay Hedge.—I saw the other day a compact and beautiful edge made of Sweet Bay (*Laurus nobilis*), at East Dene, Ventnor, Isle of Wight. It is some 6 or 7 feet in height, free from gap or other blemish, and occupies a somewhat sheltered position near large trees, on the face of a hill overlooking the sea; it forms, in short, as it were, a sea wall. It is trimmed annually by means of the knife, and is very effective.—W. F.

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

WOULD you allow me to add a little to the letter you were good enough to print on the 1st inst. At the show last week I had an opportunity of sounding some experienced horticulturists as to the practicability of bringing in a large number of fellows at a guinea subscription, without admission fee. 500 offers to bring in, on an average, ten one-guinea fellows each; more than one said "ten, I could bring in twenty if required;" others said "the leading gardeners could and would afford to become fellows at a guinea." What I would venture to propose is, that by agreement with Her Majesty's Commissioners we should arrange for room for exhibition and committee meetings at South Kensington; that the guinea subscription should entitle to a transferable ticket (it might be necessary to restrict the use to the same person the same day), this ticket to admit to all the society's shows, large and small, in London and in the country, but not to the recreation part of the gardens, and to admit bearer and two friends to the Chiswick Gardens; fellows to have privilege of cuttings, &c., as at present. I think that it is now generally felt that matters cannot go on as they are. It is no question of who are in power. I believe that if the council consisted of the twelve wisest men in London, and if they all regularly attended, they could not make the society what it might be, on its present basis. The old wise and experienced council, after all the time, thought, and consideration devoted to the subject, could make nothing of it, and so were driven to the suggested arrangement with the Commissioners, clearing off rent and debenture debt, and giving something to the good for horticulture. Those who best know the society know how utterly rotten are its foundations; it is a horticultural society, the major part of whose fellows care little for horticulture, and the principal part of whose funds are of necessity, applied to non-horticultural objects; it does not matter who are in the Council they cannot change this essentially false state of things. We have had enough, and more than enough, of attempts at patching up, and of trying to alleviate symptoms; the time has surely now come for tackling the disease itself. The South Kensington garden land, worth £300,000, bought with public money, must, if kept private, yield a return to be applied to public objects; if the Kensingtonians could, by admission fees, pay £15,000 a year rent, that is £12,000 for interest at 4 per cent., and £3,000 the cost of maintenance, they would have a strong case in favour of keeping their recreation ground private. Having friends round the gardens, I wish this could be done; but, is it possible? I now call on the horticultural world, especially on its leaders, to come forward and express their opinion, and to state whether they will exert themselves to put the society at last on a reasonable and solid foundation. With 5,000 one-guinea fellows we should be independent of all parties, and of all authority. It is the interest of Her Majesty's Commissioners, for the public good, to have little and big shares at South Kensington, it would be our interest to hold them there; surely we could not disagree over this, our only point of contact. I ask, then, that horticulturists, with influence, shall canvass their friends, and men who are guided by their opinions, and ascertain whether they will give in their names, as willing to join the society if reconstituted on some such basis as the above; they would, of course, bind themselves to nothing until the details had been worked and brought before them, I venture to say that we could receive any lists of such provisional fellows as should be sent in. I should have no hesitation in putting my name down for ten fellows.

GEORGE F. WILSON.

Heatherbank, Weybridge Heath.

Poisoning by Water-dropwort (*Eranthe crocata*).—An inquest was held lately, at the Falmouth Sailors' Home, on the body of a Greek sailor, seventeen years of age, who died from eating the leaves of the Water-dropwort (*Eranthe crocata*), erroneously called by many Water Hemlock. In the beginning of this year, three children of the Falmouth Union were poisoned by eating the root of this plant, only one of whom recovered; about two years ago one seaman, and again about five years since two seamen, died, it was thought from eating it.—JOHN D. MITCHELL, *Falmouth*.

WORK FOR THE WEEK.

FORCING DEPARTMENT.

Lettuces.—Be careful that no drip exists in the frames containing young seedlings, for if it does, the plants under its influence will certainly perish. Dust wood-ashes and dry sand amongst them, and keep them as dry as possible. Shut up the sashes at night in case of frost, but in fine weather leave them tilted up a little, and throughout the day, if fine and dry, remove the sashes. If necessary, another sowing may be made of the Hardy Hamersmith and Cos kinds. Strong plants of Cabbage Lettuces may be transplanted on a genial dung-bed, having a temperature of about 55°, covered with some light soil. After planting give no water until the plants begin to grow, and then only apply it sparingly.

Mint.—Lift some roots, plant them thickly in pots or boxes, and keep them in a corner of any of the warm houses. Keep up a succession by adding a fresh potful or two weekly.

Mushrooms.—Use no more fire-heat than is necessary to maintain a temperature of about 60° or 65°, as it tends to reduce the natural damp atmosphere of the house, thus making sprinkling the paths with water a necessary operation. Spawn succession beds when the heat has declined to 80°, and apply a coating of 2 or 3 inches thick of loamy soil over them soon afterwards.

Mustard and Cress.—Sow weekly successions thickly in shallow boxes in any house having a temperature from 45° to 65°, and cut the produce before it becomes too old.

Radishes.—Sow the Turnip and Salmon-rooted sorts in frames, and protect them from frost by slightly covering the sashes with litter in severe weather. These will precede those generally sown in sheltered places out of doors in December.

Rhubarb.—Lift good crowns of this, divest them of part of their long thick roots, and then place them amongst light soil in a Mushroom house, pit, or other place where a heat of 50° can be maintained. Sprinkle them over occasionally with tepid water, and remove, for use, the leaves as soon as they are large enough.

Seakale.—Lift this with a fork, shorten the roots a little, and then pack them pretty closely together in some light soil, and treat them as recommended for Rhubarb. Unless Seakale is forced briskly, the blanched stalks assume a somewhat stringy texture. One-year-old roots furnish the London market supply, but in private gardens older plants are commonly employed. Preserve the root-prunings for next year's plantations, by laying them up in a heap and covering them with soil, or by laying them about an inch thick on the surface of a raised bed, and putting a layer of soil about 2 inches deep over them. Here they may remain till the end of February or March, when they should be cut up into finger lengths and planted in rows about 15 or 18 inches apart, by means of a dibber.

THE KITCHEN GARDEN.

Gather up the leaves of Globe Artichokes and mulch round the plants with leaves or litter. Cut over Asparagus stalks, fork off the soil from the surface of the beds into the alleys, then mulch the beds with manure and strew over it the soil removed into the alleys. If necessary, sow early Mazagan Beans in lines 2 feet apart, and also some early Peas on a dry warm border. Lift Beet, if not already done; but, in doing so, be careful not to break the fibres, as that would cause the roots to bleed. Store the roots in small ridges in cellars, sheds, pits, or in any place where they can be kept cool and dry. In case of frost, a few Carrots, Parsnips, and Jerusalem Artichokes may be lifted and stored in a pit, or amongst rather dry sand or earth in a shed or cellar, but the bulk of the crop should be left in the open ground, protected merely with leaves or litter. Early planted Coleworts and Savoy that have formed good heads and that are likely to burst, should be removed to a cool shady place, where they will keep for a long time without bursting. Carefully watch Walcheren and Snow's Winter White Broccoli as they form heads, and break a leaf or two over the "curd," to protect it from frost or rain. Some clean straw or Fern strewed over it, in the event of frost, also answers the same purpose. Transplant Cabbages from those pricked out in store beds, and wheel manure on to spaces lately occupied by Peas planted as divisions between crops of the Cabbage tribe. Earth up late crops of Celery and Cardoons as required. As soon as a plot of ground is cleared of the Celery crop, manure it and trench and ridge it, so as to have it ready for early Cauliflowers. Protect Endive from frost by means of evergreen boughs or other material, and lift good-sized plants of it and place them in frames. As they advance to a useable size, tie them up or cover them with a piece of bast mat, a bit of board, an inverted cutting box, or any thing in that way which will tend to blanch them. Occasionally examine stored Onions in wet weather, and separate such as are decaying from the sound ones. Weed and keep clean young Onions in beds. If the smallest of the stored Onions be preserved till February and then transplanted, they will become large-sized roots

by next August. Examine, also, stored Potatoes, and lift Salsafy and Scorzonera roots and lay them very thickly in a row, in any out-of-the-way place, where they will keep better than they would under cover, and will retain their good flavour longer. Be ready with some evergreen branches, hoops, and mats, or other means, to protect Parsley from frost, and strew some lime over Spinach to prevent the ravages of slugs. Cover the crowns of Rhubarb and Seakale with leaves or litter, to preserve the ground from getting frozen, and thus enable the plants to be lifted easily for forcing, even in severe weather, should it be necessary to do so.

HARDY FRUIT GARDEN.

This is the best month for transplanting and root-pruning fruit trees, and the sooner such operations are completed the better it will be for the trees. In selecting young fruit trees from nurseries, choose "maidens" or one-year trained trees, unless they are required to bear fruit at once. In planting them, prepare wide holes, and, if the soil be poor, add some good turfy loam to it, rather than manure, which should only be applied as mulchings. Where the sub-soil is bad, a space of 3 feet square should be concreted under each tree, more particularly in the case of wall trees. In planting, spread the roots well out and carefully introduce some soil amongst the rootlets, but do not move the plants up or down when filling in the soil, as that frequently does more harm than good by breaking or doubling up the fibres. Let the boles of wall trees be about 6 inches away from the walls, place those of standards quite erect, and give to each tree a strong stake by way of support, until it has got a good hold of the ground and is able to support itself. Good sized trees may now be moved with impunity, and even bulky orchard trees can be transplanted successfully, provided their roots were cut round at some distance from the trunk last year; such portions of them as were mutilated should be cut clean off with a sharp knife. Proceed with the pruning of Apple, Pear, Plum, Peach, Nectarine, and Cherry trees, also Vines and bush fruits. Do not prune Cherries very severely; in fact, if summer pinching has been attended to, they will not require much cutting now. Fig trees should be unfastened from the walls, tied into loose bundles, and protected with mats, Ferns, or a thin thatch of Broom. A frost of 10° is injurious to the points of the shoots, but less does not injure them. Fruit bushes should also be pruned, with the exception of Gooseberries, which had better be left untouched till spring, as bullfinches sometimes prey very heavily upon the young buds in winter, and in spring the best shoots can be preserved and the worst cut out. In pruning fruit bushes, old, diseased, deformed, or twisted wood should be thinned out, and a supply of young wood maintained. Cut away the old canes of Raspberries, and tie up the young ones to strong stakes, topping them all over at a height of about 5 feet. Renew all decaying espalier stakes; and, rather than throw away the old ones, have them re-pointed and used for other purposes. Dressing and pointing stakes for young fruit trees and espaliers is work that may be conveniently done in wet and frosty weather.

SHEET VERSUS ROLLED PLATE GLASS.

THIRTY years' experience with, I believe, all the kinds and colours of glass that have been used for horticultural purposes, has enabled me to arrive at conclusions as to their respective merits and defects—conclusions that are in no way shaken by Mr. Ayres's opinions on the subject; yet I do not feel disposed to speak so positively as Mr. Ayres does as to what others have or have not had. The glass in use here is Chance's 24-oz. sheet, and I have not the slightest hesitation in saying that for general excellence, including the light it admits, I have never seen its equal. This is not my individual opinion, but that collectively of all connected with gardening who have seen it. The volume of light admitted to the interior of a glass structure is not easy to measure in the full glare of the sun at noon-day, neither is it then necessary to calculate minutely. Under any glass of fair quality, there is then sufficient light. It is in dull dark weather, in the early dawn, and evening, that we require the maximum of light obtainable. If Mr. Ayres, or anyone else who takes an interest in the matter, will try the following experiment upon which I hit some dozen years ago, when discussing the present question with a friend, he will find the result instructive. It can be carried out anywhere where there happen to be houses adjoining glazed with sheet and rolled plate. In the evening, when the light is fast diminishing, take a book or other printed matter, just step from one house to the other and see under which glass you can read the best. The test will be conclusive with anyone unprejudiced. It is in the short days of our sunless climate that transparent glass gives us more light, as also during dull weather. I have frequently seen Vines with ample healthy foliage under patent rolled plate glass; and I have also seen more Vines with small stunted weakly foliage under it, than under all other

kinds of glass put together, and this not under the care of mere novices at Grape growing, but with men second to none in the kingdom as cultivators. In respect to scalded Vine leaves I never experienced myself, nor saw any mischief in that way take place under the small old-fashioned squares and open laps, so long as reasonable care was taken as to timely air-giving; neither have I experienced any scalding with large squares, if air is given early enough in the morning, and in sufficient quantities up to the middle of the day. It only requires a moment's reflection to see the necessity for this. Directly the top lights are opened, the numerous open laps all act as an ingress for air, which rushes out at the top, drying the foliage, and causing that almost imperceptible movement in the leaves which is a certain preventive of scalding. With the large squares and close glazing it is obvious that this ingress of air cannot take place; consequently, it takes much longer to get the leaves sufficiently dry to prevent scalding.

T. BAINES.

Grapes, and Hartley's Rolled Plate.—If a communication, founded upon fact, will be of use to any of your correspondents you are at liberty to publish the following:—At a nursery where I was apprenticed, we had a Vinery glazed with Hartley's rough plate glass. The Vines were strong and healthy, yearly producing cinnamon-coloured wood, plenty of large well-formed bunches with damson-coloured berries and leathery leaves. The varieties were—Black Hamburgh, Muscat Hamburgh, and Mill Hill Hamburgh.—W. S., Birmingham.

SOCIETIES, EXHIBITIONS, &c.

BOTANICAL SOCIETY OF EDINBURGH.

At a meeting of this society, which took place the other day, the President (Mr. James McNab) delivered his retiring address, the subject being the difference observable in open air vegetation in Scotland, as witnessed previous to the years 1837-8, compared with what was seen at the present time. As far back as the oldest members of the society could remember, many of the shrubby plants familiar to their eyes in the open air in this part of Scotland were rarely now to be met with, and if they were, certainly not in the same state of perfection as they had been accustomed to see them. Whether this was owing to the diminution of our ordinary summer climate or the non-ripening of the wood from the want of sun-heat it was not easy to say, but true it was that a change had taken place during the last forty or fifty years. Three severe winters—1837-8, 1841-2, and 1850-1—carried off by death a large number of fine plants. Many of the kinds killed were re-planted, and though some succeeded well, others had never shown the vigour of stem, leaf, flower, or fruit which they were wont to do in former times. For a considerable time, both before and after the year 1835, the Hydrangea used to be grown abundantly in the gardens and pleasure grounds of Scotland, producing, in many cases, from twenty to forty heads of bloom on each plant; and about the same time, the sweet-scented Verbena formed large round clumps. Now, these plants could scarcely be got to survive long in the open air, except in some very sheltered places near the sea; and, if they did live, flowering was out of the question. Among other shrubs and trees enumerated, which forty years ago were commonly seen in vigorous condition, and which flowered and fruited abundantly, but which were now rarely to be met with, were the Rock Rose, the common Myrtle, the Almond, which at one time flowered as profusely as in the neighbourhood of London, and which now would not set its flower-buds, the Acacia, the Strawberry tree, and the Arbutus. During the ever-memorable year of 1860-1, a large Myrtle was killed in the garden at Leuchie House, North Berwick. That tree had stood in the same position, and had flowered regularly for 100 years. It was quite evident from these illustrations that we had not in Scotland the amount of summer heat that we were wont to experience in former times. At the same time we had not the same regular winters. Forty years ago, frost set in regularly at Christmas, and often lasted for weeks. Of late years, with but few exceptions, we had often as mild weather at Christmas as at any other time of the year. He was also inclined to think that a diminution of climate had taken place since the Larch had been introduced into this country, for how did it happen that out of enormous quantities of seed annually imported, few of the progeny seemed to have the vigour of the original trees introduced at Dunkeld and Monzie 135 years ago. In place of the Larch, he advocated the planting of the Wellingtonia as a nurse tree. During the years 1828, 1831, and 1834, he had seen the black Esperen Grape produce clusters of fruit on a south exposed wall in Edinburgh quite as ripe and as well coloured as during an ordinary season in England. The black Mulberry was also ripened to perfection, but neither of these fruits had since come to a state of maturity. Figs used to be frequently grown on open walls in many districts of Scotland, but now fruit was rarely produced in a thoroughly ripe condition without the aid of fire flues. He proposed to investigate the climate of Scotland by means of a central committee, who would collect information relative to the best varieties of Apples, Pears, Plums, Gooseberries, Strawberries, &c., which succeeded best in each of the Scotch counties. Peaches and Neckarines could not, from want of summer heat, be ripened in the same state of perfection in the open air as in former times, and Asparagus and Mushrooms and

Tomatoes were gradually disappearing from the want of summer heat. He then proceeded to discuss the question of acclimatisation of plants, maintaining that a plant was as hardy when first introduced into this country as it was after being half a century in cultivation. Having referred to hybridisation as a means of making plants hardier, Mr. McNab concluded by stating that no one could deny, notwithstanding the lessening of the summer heat, that Scotland possessed one of the best climates in the world for evergreen shrubs, which were here to be met with in as great a state of perfection as anywhere in England or Ireland. Professor Balfour, in moving a vote of thanks to Mr. McNab for his valuable address, took occasion to coincide with the remarks made upon acclimatisation. Mr. Buchan, secretary of the Meteorological Society, seconded the motion. He had had the impression that there had been no change of climate in Scotland, but the facts brought before them that evening had shaken his preconceived ideas. That such changes had occurred was new to him. He approved of the idea of forming a committee of the society who should be specially entrusted with the collection of information regarding fruits and the growth of plants. They would get together a body of information of the utmost value not only in a scientific but a practical sense.

LAW NOTES.

Head Gardeners' Perquisites.—At Selby County Court, the case of Hardisty v. Tock has been heard. The defendant, Mr. James Tock, of Drax Abbey, Selby, hired the plaintiff as his gardener, and he worked there for several weeks, but at the end of that time he left, and now claimed £2 6s. 8d. balance due to him for wages. Mr. Tock pleaded a set-off exceeding £5, 23s. of which was admitted and the rest denied. The principal items consisted of money prizes the plaintiff had won at Selby and Howden Horticultural Shows, by exhibiting flowers and fruit from the Drax Abbey Gardens. The Judge said he had always understood that this was one of the perquisites of the head gardener. The plaintiff added that Mr. Tock expressly agreed with him to exhibit at the shows named, he to have the prizes and to bear the expense of moving the flowers. On the other hand, Mr. Tock said there was an agreement that the prizes should be divided between the head and under gardener, and in this he was corroborated by Booth, the under gardener. The case excited a good deal of merriment, and the Judge, after remarking that considerable feeling had been imported into it, gave judgment for the amount sued for, less 22s., the portion of the set-off admitted by plaintiff.

Cutting Trees.—The plaintiff in this case is a widow, residing at 4, Harley Place, Marylebone Road, the defendant a gentleman who resides at No. 5 in the same street. In front of these two houses, between them and the Marylebone Road, is a garden; in this garden were Lilacs, Hollies, and Creepers, which grew so high at the part of the garden opposite the defendant's house that, according to his allegation, they obstructed his view of Regent's Park. He complained to his neighbour of this, and she directed her gardener to clip the shrubs. After a time, however, she declined to clip them any more, and thereupon the defendant had them cut down; and it was for so doing that this action was brought. For the defendant it was contended that although there was no fence dividing the garden into two parts, still so much of the garden as was opposite to his house belonged to him, and that, therefore, he had, of course, the right to cut the shrubs. The plaintiff, on the other hand, contended that the whole garden was appurtenant to, and formed part of, the premises occupied by her. The jury found a verdict for the plaintiff: damages £15.—The learned Judge gave the defendant leave to move to enter the verdict for him.

COVENT GARDEN MARKET.

NOVEMBER 21st.

Amongst pot plants are Poinsettias, Roman Hyacinths, Cyclamens, Fuchsias, white Azaleas, Begonia Weltoniensis, Solanums, Laurustinus, Palms, Dracenas, Euonymus, Heaths, and Chinese Primroses; cut flowers include blooms of Orchids, Zonal and Cape Pelargoniums, Bouvardias, Camellias, Gardenias, Tuberoses, Rosebuds, and Chrysanthemums. Fruit consists of Oranges, Lemons, Pomegranates, Grapes, Pears, Apples, Pines, Bananas, Prickly Pears, Spanish Melons, Custard-apples, &c. In one of the salesmen's windows are exhibited thirteen Belle Angevine Pears weighing, it is stated, collectively, 36 lbs. Truffles are moderately plentiful, as is also Seakale, and some extremely fine Asparagus has been imported from France.

Prices of Fruits.—Apples, per half-sieve, 9d. to 1s.; Chillies, per 100 2s. to 3s.; Cobs, per lb., 1s. to 2s.; Chestnuts, per bushel, 15s. to 20s.; Filberts, per lb., 1s. to 1s. 6d.; Grapes, hothouse, black, per lb., 1s. to 6s.; Muscats, 2s. to 6s.; Lemons, per 100, 8s. to 12s.; Melons, each, 2s. to 4s.; Oranges, per 100, 8s. to 12s.; Peaches, per doz., 12s. to 18s.; Pears, per doz., 1s. to 1s.; Pine-Apples, per lb., 3s. to 6s.; Tomatoes, per doz., 1s. to 2s.; Walnuts, per bushel, 8s. to 12s.; ditto, per 100, 1s. to 1s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 4s.; Beet, Red, per doz., 1s. to 2s.; Brussels Sprouts, per half-sieve, 2s. 6d.; Cabbage, per doz., 2s.; Carrots, per bunch, 4d. to 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 3s. to 4s.; Cucumbers, each, 6d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horse-radish, per bundle, 3s. to 4s.; Leeks, per bunch, 3d.; Lettices, per doz. 1s. to 2s.; Mushrooms, per pottle, 1s. to 2s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 2s. 6d. to 4s.; Button, per quart, 8d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Potatoes, per bushel, 2s. 6d. to 4s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Salsafy, per bundle, 1s. to 1s. 6d.; Savoy, per doz., 1s. to 2s.; Scorzoner, per bundle, 1s.; Seakale, per punnet, 2s. to 3s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, per bunch, 3d. to 6d.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

AN ORNAMENTAL ORCHARD.

AN orchard, combining utility, shelter, and ornament, would, in many places, be a desideratum; but is such a combination practicable? Doubtless it is. Fruit-trees are, or may be made, as handsome in form as most other kinds of trees; while among the latter none can vie with them in beauty when in blossom, or when laden with fruit. In fact, it is marvellous that they are not more generally planted for ornament, chiefly or wholly, than they are. What tree can compare in bloom with the soft pink flower of the Apple, with the snowy whiteness of the blossoms of Plums, Pears, or Cherries? And then the fruits in all stages are beautiful; what shading into green, gold, scarlet, silver, and pink we have among them! What spots, and streaks, and flakes of beauty! What perfection of form! And then there is the beauty of the leaves, their colour changing from green of all hues to golden russets, brown and red. An avenue of Pear trees is beautiful even in winter, especially when covered with hoar frost. Each tree stands out like some grand work of art, formed, as it were, of frosted silver. As to shelter, there can be no doubt of fruit trees being capable of affording any amount of it in summer, but, like other deciduous trees, they give comparatively little in winter. That little, however, is much more than is generally supposed. If a number of large Pear trees, for example, be planted, quincunx fashion, in rows, and pretty closely together, it is astonishing how much their bare boughs will break the force of prevailing winds. The thermometer may not register much difference as regards temperature, yet the testimony of the senses, and the surer testimony of the better growth of the trees that are sheltered, alike declare that there is a manifest difference between the exposed and the sheltered sides of orchards and gardens, even when the sheltering medium is only the trees themselves. But shelter might be further afforded by a screen of evergreens on the exposed side, and for this purpose few trees are better than evergreen Oaks. These are in full leaf in winter, when shelter is most needed; they shed their leaves at midsummer when an excess of shelter might prove injurious. The evergreen Oak is also a tree singularly free from the attacks of insects. Next to this Oak we would rank the Holly, and, if this is used, a splendid effect may be produced by planting groups of all the variegated and other varieties, reserving the common green for more exposed places, and where greater height is needed. The Yew is, perhaps, the best, the most dense, and, in many positions, the fastest-growing sheltering plant of all. It also forms a fine contrast to an orchard at all seasons of the year. The Arbutus, too, forms capital shelter; but it is liable to be cut to the ground by any frost within 5° of Zero. Spruce or other Firs are not equal to the foregoing for screens, as they are apt to get bare at bottom where most needed. There is yet another and a better method of shutting out unsightly objects and providing perfect shelter by the same means. Throw up banks of earth to the requisite height and clothe their summits and sides also, if desirable, with American plants, Heaths, or other flowering shrubs or trees, or with masses of Furze, Broom, &c., if a picturesque background is a desideratum in the view from the windows, and then fill in the bottom of the banks with Purple-leaved Filberts, Medlars, Mulberries, Quinces, Fairy Apples, Siberian Crabs, &c. These form an impenetrable screen to the orchard, and are alike beautiful and useful. Having briefly noted the points of shelter and ornament that ought to distinguish an orchard within sight of a dwelling-house, we now come to discuss the main point, utility. Many, of course, plant orchards merely for their produce; and there are two general methods of planting them. By the one, each plant is expected to become a full-grown tree; by the other, its area is limited throughout its life. In an orchard of five acres there is room for both systems, and both may prove best according to circumstances. In the garden only small trees are fairly

admissible; but it is widely different in the orchard. Here the fine, almost timber trees of the olden times may prove as profitable as the pyramids and bushes of modern days. Many may question this. But my advice to all who are about to make orchards, is to try both plans. A noble Apple or Pear tree wide-spreading and high, is not only a grand object to look upon, but a most profitable thing to possess. Perhaps finer fruits may generally be gathered from smaller trees on dwarfing stocks; but, for quantity and fair quality, the extension or full-sized system is the more profitable. The untrained and conical and bush systems may be kept separate or intermixed; and, in any case, as trees are relatively cheap and land dear, and time is more than money to most planters, the trees should be planted thickly at first. Permanent fruit-trees, with a clear bole of say from 4 to 5 feet in height, ought to be planted at distances of from 20 to 25 feet apart. The old orchardists used to recommend almost double these distances. But in these days of craving for immediate results, the half of five-and-twenty feet will seem a large space to devote to a single tree. Of course they will not be very long in occupying it, but we hold it better to prune them than to wait long, and an orchard, like a landscape, can be made, or at least managed, by the knife as well as the spade. But even at these distances, another row between each permanent one, and also a second plant between each pair in this row, should be introduced for immediate fruiting. These will pay for their purchase many times over before being removed to make way for the permanent trees. The supernumeraries are useful also as affording more shelter, and the permanent plants will grow faster thus nursed up than if they stand alone. Indeed, in bleak positions, orchard trees should be nursed up with Larch, Spruce, or other forest trees. But, unless in very exposed places, it is far better and more profitable to make the trees nurse each other by planting thickly. The decaying roots also agree better with the living ones if the trees are of similar families. As to the sort of fruit-trees used as nurses, this is mostly a matter of taste or of profit. Of the taller forms, pyramidal trees are by far the most profitable. But they require rather than give shelter; whereas temporary standards of similar height to the permanent trees give and receive support to and from the latter. The dwarf trees, however, shelter the stems, which, some suppose, need it most; others, again, prefer a permanent mixture of standards and dwarfs—a very profitable arrangement. Plant the standards at distances of, say, 20 feet apart, and fill up the interstices with upright pyramids, or those of semi-weeping habit, like the Pear trees at Frogmore and at Sandringham. Again, mere temporary bush trees or cordons might be planted even between the dwarfs, and yield an immediate crop, then to be removed out of the way, leaving the pyramids or standards as permanent trees, or either of them only in the end. The grouping style of planting would prove much more ornamental, and equally or more profitable, than the usual hard and fast lines, and indiscriminate straight admixtures. The style and form and colours of many fruit trees are sufficiently distinctive to classify them into groups. For instance, separate masses might be planted of such useful varieties of Apples as Cox's Orange Pippin, Blenheim Orange, Nonesuch, Court Pendu Plat, Reinette du Canada, Gloria Mundi, Scarlet Crofton, King of Pippins, Kentish Fill-basket, Lord Suffield, New Hawthornden, Claygate Pearmain, &c. In Pears, again, Louise Bonne of Jersey, Winter Nelis, Marie Louise, Beurré de Capiaumont, Passe Colmar, Glou Morceau, Duchesse d'Angoulême, Flemish Beauty, and the old Swan's Egg, &c., would form distinctive groups, either singly or combined. The same principle could be carried out with pyramids and groups, formed of each of such well-proved varieties as Golden Reinette, Pearson's Plate, scarlet and other Nonpareils, Melon Apple, Mother Apple, Cockle Pippin, Ribston Pippin, Early Harvest. In a similar way, Pears, Cherries, Plums, &c., might be massed into clumps of any size and shape. The spaces between could be occupied with small fruits, Filberts, kept dwarf or with upright or vertical cordons. The latter would look rich in groups, and would yield a maximum return from a minimum of space. It has not been adopted to anything like the extent its merits demand. Or,

again, in an ornamental orchard, the spaces between the groups might be laid down in Grass and the latter further furnished with double-flowering Peaches, Almonds, &c., or Quinces, Medlars, and Mulberries, with room to develop into fully expanded trees. Further, winding walks either of Grass or of gravel should be carried through the orchard in all directions, rendering it an easily accessible and pleasant promenade at all seasons. All these possible effects would be heightened, were the ground undulated by Nature, or made uneven by art; in either case the tall trees should occupy the summits, and the lower ones the lower ground, reserving the lower points of all for walks or stand points, with an occasional rise, to get a view from the top as well as the bottom. With skill in planting, and a proper gradation of height and contrast of form, capital ornamental effects might be secured, even in an orchard of small extent, and that, too, without sacrificing, in the least, the main purport of all orchards utility or profit.

D. T. FISHER.

LEAF PRINTING FROM NATURE.

By JAMES F. ROBINSON.

THERE are several different methods in use for printing or photographing leaves, some of which are exceedingly simple. First select the leaves, &c., then carefully press and dry them. If they are placed in a botanical press, care must be exercised not to put too great a pressure on the specimens at first, or they will be spoiled for printing. I have always found an old book the best for drying the examples to be used. Fibrous leaves, such as the Birch, Oak, and Maple make the best photographs. Never think of printing leaves which are either covered with hairs or are rough and uneven; it will only lead to unsatisfactory results. Mature leaves only should be gathered, not succulent or young leaves, neither attempt to print any leaf with a thick epidermis, such as Bay leaves. The best for a beginner are the fronds (leaves) of Ferns, the Maiden-hair, Parsley, Hart's-tongue, and Polypody, Sea Spleenwort, the little Wall-rue Spleenwort, and Centipede Spleenwort; nay, you can scarcely choose any Fern that will not produce excellent results. The most lovely album pictures I have ever seen were printed from Fern fronds by one of the following processes. Not only are they pretty objects, either framed for mantleshef ornamentation, or in the album, but botanists, and more especially every gardener who is interested in pteridology, should print the fronds of every species of Fern they can procure, afterwards mount them in a blank book on the left-hand page, then on the right hand page write the name, and habitat, with a description by which it may be recognised, the method of cultivation, and any other useful memoranda; by this means, in a short time, he will have compiled a volume, full of deep interest and utility. Many persons cannot afford to purchase expensive works on pteridology, yet they may soon form a permanent record for their own reference, which will be more valuable to them than any other work. I throw in these remarks as a hint worth notice by practical horticulturists.

Requisites.

The really useful requisites for Fern photography are two pieces of glass of the size you intend your pictures to be, common window or crown glass without air bubbles, which may be bought from any glazier, will answer the purpose admirably. For the last process described, one of the glass squares should be cut in two equal parts and a strip of muslin pasted over the division to form a kind of hinge. Then you will require paper, which should also be of one regular size. If a photographer was asked as to the best kind, he would at once recommend the albumenised paper, which he uses for his carte-portraits, but as I wish to point out how to work cheaply as well as efficiently, I would request my readers to use only the best wove letter paper. With a sharp-pointed penknife you may afterwards cut it the size you wish. I must warn the inexperienced not to use what is known in the stationery trade as "laid paper." We often see on the quarter-ream packet of note-paper the words "the best cream laid note;" never use this, it will not succeed if you do. On the laid paper the peculiar wire marks left by the manufacturer are to be seen when held up to the light; eschew this by all means.

The wove papers are devoid of these marks; white paper only, of course, should be used.

The above are the needful requisites to work with, or the "stock-in-trade." It is well, however, to have at hand a few American clothes'-pegs, or spring clips, which may be purchased for a penny each from most ironmongers. Of course a few chemicals are required. In working with these great cleanliness must be observed. Hard or spring water must not be employed; use, if you can procure it, nothing but distilled water, or what will answer equally as well, clean and pure rain water. The chemicals requisite are nitrate of silver, prussiate of potash, bichromate of potash, blue vitriol or sulphate of copper, and hypo-sulphite of soda. Keep the chemicals in bottles properly labelled to prevent any accidents and confusion; they will not be kept so cleanly if preserved in papers.

Photographic Printing.

We will first describe the most simple mode of photographing, and then proceed to more difficult and complex formulas. Dissolve in a clean half-pint medicine bottle, four drachms (half an ounce) of prussiate of potash in about four tablespoonfuls of rain water. When it is all dissolved, so that none is visible in the bottle, pour half of the solution in a dinner plate, and float on its surface, for a few minutes, a sheet of paper of the size intended. After sufficient of the chemical is absorbed, hang it up on the edge of a shelf, by sticking a pin through one of the corners, to dry. All these operations should be performed in a dark room. A candle, however, may be used, because the rays of light emitted by a candle, being yellow, do not effect the sensitised or prepared paper. A better plan, perhaps, is to brush the solution over the paper by means of a large camel-hair pencil. Let cleanliness be observed, or the attempt will end in failure and disappointment. Lay upon one of your glass sheets three or four folds of white blotting paper; upon this the dried and sensitised prussiate of potash paper, with the prepared surface uppermost, and upon this place the Fern frond or other selected and dried leaf. Upon the leaf lay the other sheet of glass (perform all this in the dark room), then, to keep the leaf and sheets from moving, fasten one of the clothes'-clips on each end.

Place the glass in the open air, under the direct influence of clear sunlight if possible. If the day is at all cloudy, it will take much longer to print, but, with a clear sky, &c., it will probably be half an hour or thereabouts before it is sufficiently exposed. Be sure, however, to expose it a sufficient length of time; a little practice will soon teach you how long to leave it in the sun. Now watch the paper, and you will gradually observe the part not covered by the leaf changing, from a yellowish hue to a bright blue. The latter will deepen until it is almost black. When you believe it is sufficiently exposed to the sun's rays, remove the leaf, glasses, &c., and you will find printed on the paper, a yellow outline of the leaf on a deep blue ground. Now wash the paper in water, changing it frequently, until you observe the yellow change to a white—the whiter the better. By this means all the chemical is dissolved from the paper, leaving the part where the leaf lay a clear distinct white. If the glasses are removed too soon, the picture will be pale, and if they are left too long in the sunlight, the blue ground will fade.

The Chromotype Process.

This method is similar to the last, except that different chemicals are required to work it efficiently. Speaking personally, I have not succeeded so well with it as with the last process; some of my readers may, however, succeed better. The chemicals required are pure sulphate of copper, bichromate of potash, and nitrate of silver. The latter should be handled with care, as, if it comes in contact with linen, it stains it black; the hands, too, suffer much, so that the skin is blackened and destroyed; it is, therefore, advisable to wear kid gloves when using the solution. The same kind of paper and glasses answer for this as for the former process. Dissolve about $\frac{1}{2}$ ounce of sulphate of copper in half-a-pint of rain-water, and $\frac{1}{2}$ ounce bichromate of potash also in half-a-pint of rain-water. The nitrate of silver is very expensive; very little, however, is required in any of the processes, and, for this, 1 drachm should be dissolved in an ounce of clean water. First, coat over, as

in the first method, one side of the paper with the copper solution, then, when it is dry, coat it with the bichromate solution. After drying the paper, expose it as before to the sun for about an hour, then, if you think it sufficiently exposed, coat it over with the silver solution; or the processes may be reversed if albumenised paper is employed. The veins, &c., in this method, should be a bright scarlet. The papers may be prepared for use some time before they are required.

The best Process.

The best process of Nature printing is, without doubt, the following, although it requires much more care, patience, and neatness than the foregoing. As the prepared papers are exceedingly sensitive to light, the directions in respect to a dark room must be strictly adhered to. The chemicals, which should always be dissolved in bottles ready for use, are as follows:—First a solution of nitrate of silver, containing 1 drachm or 60 grains to each ounce of pure or filtered rain-water. Any druggist will prepare this solution in a few minutes with distilled water, which can be relied upon for good results. Then a solution of hypo-sulphite of soda is needed, containing two ounces to each half-pint of water. To work well, and secure reliable prints, use only the albumenised paper, which is kept ready for sale by every photographic chemist, and, if possible, procure a glass rod, to save the hands from being stained. Always have the bottles containing the solutions correctly labelled. When you have cut the paper to the size required, pour the nitrate of silver solution on a shallow dish, and float the pieces of paper separately with the prepared surface on the liquid for about ten minutes. In doing so, take care no air bubbles are beneath the paper, or it is useless for printing; when you detect any bubbles, gently lift up the paper with the glass rod, and taking hold of the corner with the finger and thumb of the left hand, remove the bubbles by touching the part with the rod. A little practice will soon make you perfect in sensitising the paper. After floating the papers for about ten minutes take them out, and drain them for a few minutes on the dish, so that no silver may be lost; then hang them up in a dark closet by pinning the corner on a string suspended across the room. In sensitising the paper always wear old kid gloves, as well as any old garments you may happen to have at hand, the solution being so liable to spoil the clothes and injure the skin, that this advice is very needful. It is well to prepare a quantity of papers beforehand; they will keep for several days; the only difference is that newly-sensitised papers print much more rapidly, some people say they give better pictures, and probably it is so; however, if they are to be kept, take care no sunlight is admitted to them. The printing part of the process is exactly similar to the first method, only it needs watching more carefully, and in using the glasses, place the one cut into two parts and hinged at the bottom beneath the blotting papers and Fern frond; when the printing is going on, you can turn them up and examine the picture. Only do not displace the leaves ever so slightly, or the picture will be useless. A good rule is to print the picture much darker than you intend it to be when complete, because in the fixing process it becomes much lighter. After being exposed, wash the print in clean water to take away the excess of silver; you cannot wash it too well. Then having placed the hypo-sulphite of soda solution in another dish, place the picture beneath it. Do not float it as in the bath, but constantly keep it moving about with the fingers for about fifteen minutes, not longer. This is to fix the impression and make it a permanent picture. Then wash it, changing the water frequently. Do not allow a drop of the fixing solution to remain on the paper, or it will stain it yellow, which, if nothing more, will make it unsightly. All you have now to do, is to dry the picture either in a book or betwixt folds of blotting-paper beneath a gentle pressure. The last process, is after all, the best, yielding permanent and truthful results. Some Fern variety, which perhaps has never been figured in any book, by this means can be printed "true to nature" and can be referred to with pleasure in after years. I have seen a fair-sized volume containing on one page a nature-printed or photographed Fern frond, and on the opposite page, as described above, a short but correct and faithful description, &c. This was the best volume on British Ferns and their varieties I have ever seen.

THE AMATEUR'S GARDEN.

THE ROSE GARDEN.

WHEN it is possible to play the organ without learning how to manipulate the notes or to pedipulate the pedals, then shall it be practicable to have beautiful Roses without knowing how to grow them. Not before, although a great number of persons (who would never think of challenging Mr. Grace to a match at single wicket because they had bought a bat) annually persist in expecting specimen blooms from Rose trees planted anyhow, any time, anywhere, and then forgotten until the summer comes, and the Rose does not, and "there never was such a filthy climate, such a beastly soil," &c. Ah! if the poor Rose, dying from depletion, bled to death by bloated caterpillars, poisoned by the aphids as Cleopatra by the asp, could sigh her sorrowful story, should we not speedily have that accuser in the dock and hear him sentenced to a lively six dozen from a long, strong, lateral Briar? As surely as Shakespeare learned his alphabet, you must begin with the rudiments if you would succeed. If your flour is fusty, or your barm is sour, or there is a crack in your oven, you cannot bake wholesome bread; and, unless your soil is fertile, and clean, and dry, and your position sunny, and your Rose trees well planted, and mulched, and pruned, you cannot realise the Rose. To help those who have made this discovery, and are desirous to guide their own exertions by the experience of others, I propose to offer some directions, in the pages of THE GARDEN, as to what should be done in the Rosarium in the different months of the year, and herewith commence with November, the most suitable time in which to begin a directory; for now must be planted, the sooner the better, both Rose trees and stocks for Roses. As to the former, I can make no special selections, not knowing the requirements of those who read. Whatever trees are ordered, let them be firmly planted in soil well-dug and well-drained, away from trees, but not too much exposed; and let them be secured to a stake, if they are tall standards, and be well manured, whether tall or short. As to the latter, determine the vexed question of standard Briar, seedling Briar, or Manetti for yourself. Try them all, and use that which succeeds with you best. Mr. Cranston's Victory at Wisbech, where he won the great prize of £20, with Roses grown on the Manetti, has made that stock a favourite; but it does not suit all soils, and, if you wish to exhibit, do not be without some fresh, sappy, two-year old Briars for budding next July. I have yet to prove the capabilities of the Briar raised from seed, but I have a goodly patch of them (700) to bloom next summer, and whether my hopeful anticipations are realised or not, the readers of THE GARDEN shall know all that is known by theirs faithfully, S. REYNOLDS HOLE.

P.S.—Of the Roses sent out in 1872, I prefer Annie Laxton, Baron de Bonstetten) Boncenne and Bonstetten, are very much alike, especially Bonstetten), Baronne Louise Uxkull, Bessie Johnson, François Michelon, Le Havre, Lyonnaise, Madame George Schwartz, Madame Lefebvre, Bernard, Monsieur Etienne Levet (the best of the lot), President Thiers, and Richard Wallace. Of this year's Roses, I commend Claude Levet, Cheshunt Hybrid, and Madame Lacharme H. P.'s, and Perle de Lyons, T. I hope next summer to add my own namesake also to the list of Roses *de la première qualité*.

Our Orange Supply.—The Spanish civil war seems likely to create an impediment to the usual export of Oranges from that country. The Balearic Islands, however, may still be depended upon for a supply. The fruit is exported to Marseilles from Majorca in such immense quantities and in so wasteful a manner that it is reasonable to suppose that a supply exists adequate to a greatly increased demand. The Oranges arrive at the French port heaped in the holds of vessels like Potatoes, and are sold on the spot at a very low rate. Italy, Sicily, and Malta may also be trusted to contribute their quota, and France produces a respectable quantity of Oranges of rather inferior quality; but the produce of Malta belongs rather to the connoisseur who is willing to pay for choice varieties, and the French will require their Oranges at home. The prospect of our Orange supply will, we trust, however, brighten, for London in winter would look dreary enough without the golden heaps in its shop windows.

NOTES OF THE WEEK.

— THE GARDEN entered on its third year on Wednesday last, the 26th inst., and its success now enables the conductor to make a first step towards its improvement. It is this day permanently enlarged from thirty-two to forty pages. The old heading is replaced by a new and more artistic one, which is, moreover, an example of the best work of the modern English school of wood engraving. Among changes for the better which we contemplate is one commenced to-day, the "Amateur's Garden." This will be written exclusively by amateurs distinguished for skill in the various departments of gardening. The series begins with a seasonable article on Roses by the Rev. S. Reynolds Hole.

— WE understand that a meeting of horticulturists is to be held at 4, Kensington Gore (close to the Albert Hall), on Wednesday, December 3rd, at 4 p.m., to discuss the present position and prospects of the Royal Horticultural Society.

— DE CANDOLLE'S "Prodromus" has now been completed as far as Dicotyledons are concerned; and it is not intended to continue the work further. The publication of the work was commenced in 1818.

— It is a well known fact that Ferns and Cycads seldom produce branched trunks. Nevertheless in Mr. B. S. Williams's nursery at Holloway, we recently saw a trunk of *Stangeria paradoxa*, with a three-branched stem, and one or two bifurcate trunks of *Todea superba*, among a lot just imported from New Zealand.

— It is not generally known that there are several varieties of the beautiful *Cochlostema Jacobianum*. The best forms flower very freely, and lasts fully six months in bloom. We recently saw several plants of it in flower, and were assured that it would supply an abundance of cut bloom until the middle of next summer.

— M. H. J. VAN HULLE, the distinguished curator of the Botanic Garden at Ghent, has recently been presented by the King of Holland with the decoration of the Order of the Crown of Oak. This order has been conferred in recognition of the services which M. Van Hulle has rendered to Holland by his numerous horticultural publications in the Flemish language.

— THE Corporation of Dublin have resolved to plant a line of trees on each side of Sackville Street, the principal street in the city, and the favourite promenade of the citizens. We only wonder that this has not been done before. Imposing as the aspect of Sackville Street is as one looks upon it from Carlisle Bridge, the addition of trees will render it one of the handsomest of city thoroughfares.

— REFERRING to the moving bog of Dunmore, which has recently covered 200 acres of pasture with thick black mud several feet deep, it may be observed that this is no very unusual phenomenon. The greater portion of the bog lands of Ireland, which twenty years ago were estimated to cover an area of 2,831,000 acres, are situated above the level of the sea, at altitudes varying from 25 to 500 feet, and the nature of their formation is such that, in times of heavy rains, they sometimes gravitate towards a lower level.

— THE Corporation of the City of London voted unanimously, the other day, a sum, amounting in the aggregate to £10,000, for the acquisition of the seat of the Gurneys at West Ham as a public park—a consummation much to be desired; for, not far from the park, there are streets and alleys crowded with a population whose occupation renders fresh air and a walk in the fields not a pleasant recreation, but an absolute necessity. This park, too, has its associations—the names of Miss Fry and the Gurney family, who so largely benefited West Ham in times gone by, and who, in this matter, have added another to the list of their generous acts, the memory of which will no doubt be perpetuated in the name of the park. It consists of eighty acres, the market value of which is £25,000; but Mr. Gurney has offered the munificent sum of £10,000 as a subscription towards the purpose, and the rest of the money has been nearly made up. The ground, which we have recently visited, has long been an ornamental garden, is surrounded by a belt of established plantation, and contains, in what were the pleasure grounds, some good specimen trees, including a very fine Maiden-hair tree and large *Koelreuteria*. There are also plantations of American plants, large in size and in perfect condition. One of the entrance-lodges is charmingly picturesque, and ought to be carefully preserved. Therefore, it seems to us that a very important addition to the parks of London may be made here, and at slight expense, compared with such recently formed parks as Southwark and Finsbury, in which nearly all had to be done. There needs very little planting to make Upton Park a very charming one, inasmuch as one portion is already full of handsome garden trees which have had a happy pleasure-ground existence for many years past. We particularly advise the preservation of these trees, shrubs, and also that of the fine open piece of meadow Grass. To destroy the breadth of this by cutting it up with needless walks,

beds, mazes, &c., would be to destroy it so far as the possibilities of quiet or fine landscape effects are concerned.

— THE rare and curious hybrid *Phajus irroratus* is now in flower in the Royal Exotic Nursery at Chelsea.

— NINETY-FOUR essays have been sent in in competition for the £100 prize offered by Lord Cathcart for the best paper on the Potato disease, to none of which, however, we believe, has the prize been awarded as yet. The judge's report on the subject will probably be made public early in December.

— AMONG herbaceous and border plants worth growing for the indoor decoration of apartments we may direct attention to the hybrid forms of *Acanthus*, such as *A. Candelabrum*, *A. hybridus*, and *A. longifolius*. These have elegantly cut foliage, of a fresh green colour, and form excellent substitutes for the more tender Ferns and Palms.

— WE are pleased to see that provincial naturalists' clubs are endeavouring to discourage the practice of removing rare plants from the localities of which they are characteristic; and that at field meetings, in future, specimens are to be gathered without disturbing the roots. The practice of offering prizes for rare specimens is most pernicious, as its tendency is to exterminate the rare flora peculiar to certain districts. One of the prime duties of every local club should be the preservation of such rare specimens, the fact of whose existence is often of great value from a scientific point of view.

— MR. JAMES BLACKLEY has just published a pamphlet on "The Potato Disease; its Cause and Cure," in which he states that he has, for the last four years, grown Potatoes perfectly free from disease, by means of the cure which he has discovered.

— THE Corporation of the City of London have, we see, advertised for designs for a fruit and vegetable market, which is intended to be built on the site of the present Farringdon Market. Premiums of £300, £200, and £100 will be given for the three most approved designs. These designs are then to become the property of the Corporation. But it is expressly pointed out that the Corporation do not engage to carry out any of these plans, or to employ in the execution of the works any of the persons to whom the premiums may be awarded. Designs are to be received at the office of the Controller, Guildhall, by noon of the 14th of January next.

— AT this season of the year, with the exception of *Chrysanthemums*, no out-door flowering plants are more effective than the autumn-blooming *Crocuses*, several species of which, should the weather continue mild, will flower nearly up to Christmas. We noticed the following in great beauty the other day, at Tooting, viz., *Crocus speciosus*, which has been in flower for the past two months, and is still finely in bloom; *C. serotinus*, *C. sativus*, and *C. byzantinus*, all of which are distinct and handsome kinds, from which a supply of bloom may be obtained in many parts of the country during the later months of the year, particularly if planted in well-drained sandy loam.

— BATH seems desirous to have a winter garden, and how to best secure such a boon is thus stated by one of its citizens. "It must be shown," he says, "that it will pay as an investment, and then people will embark their money in it. My advice, therefore, to the present projectors, who, I must say, deserve credit for the comprehensiveness of their proposals, is not to waste their efforts in trying to get donations and benefactions, but to start a small company, as, in fact, has been done at Torquay, where they are at the present time establishing a winter garden at a cost of about £5,000." It is proposed that the building shall be 180 yards long and 150 yards wide, and that it shall be constructed chiefly of glass. The entire building will be heated, and by this means its lawns and foliage will be kept as green in winter as in summer. The undertaking is estimated to cost between £5,000 and £6,000, of which the park committee have offered to subscribe £100.

— M. VAN HULLE, curator of the Royal Botanic Gardens at Ghent, writes to us as follows:—"Many kinds of trees, chosen for planting avenues, public promenades, &c., either do not accommodate themselves to all kinds of soils, or else require an inconvenient length of time to attain to such size and development of foliage as will afford the desired shade. In consequence of this, the Canada Poplar (*Populus canadensis*) has been largely planted about Munich and other places in Germany. This tree grows quickly, and in almost any kind of soil; its only defect, as a shading tree, is, that it sometimes, if left to itself, shoots up into too spiral a form to be of service in that way. This, however, is easily guarded against, by heading down the young trees to the height of from 12 to 15 feet, and paying some attention to the pruning of the branches for some time, so as to secure the formation of handsome crowns. Treated in this way the trees are quite as effective, at some distance, as well-grown specimens of Horse Chestnuts."

THE INDOOR GARDEN.

CATTLEYA FAUSTA.

THE fine range of Orchid houses in the Royal Exotic Nursery, Chelsea, can seldom be looked through without finding some novelty not seen before, or a much finer form of some old favourite than had hitherto been met with. Nearly the whole of the seedling Orchids in cultivation have been raised, as is well-known, by Mr. Dominy, but the fine new hybrid of which the accompanying is an illustration, owes its origin to Mr. Seden, who has had charge of one section of Messrs. Veitch's collection for some years. It is a hybrid between *C. exoniensis* and *C. Loddigesii*, the former being well known to all Orchid-growers as one of the finest of all Cattleyas, while both are free growers and profuse bloomers. In habit, *C. Fausta* more closely resembles *C. Loddigesii* than its other parent, its elon-

lobes being pale in colour and similar in form to those of Loddige's Cattleya, while the central one is expanded, slightly fimbriated, of a deep rosy tint, heavily marked with dark velvety-crimson streaks, the intensity of which is considerably heightened by the narrow white margin, while the throat or disc is suffused with a broad blotch of clear golden-yellow, as in *C. exoniensis*. The flattened column is pale in colour, and forcibly reminds one of that of *C. Loddigesii*. It is inferior in beauty only to *C. exoniensis* itself, and will take up a prominent position amongst other kinds either for purposes of general decoration or for exhibition.

F. W. B.

WINTER-FLOWERING ZONAL PELARGONIUMS.

I GROW my collection of these mainly for autumn and winter blooming, instead of for summer flowering. It is during the months



gated obovate pseudo-bulbs being each furnished with from one to two oblong leathery leaves, more or less undulated along their margins, and of a fresh green colour. The flowers are large and spreading, being about 4 inches across, but there is every reason to believe that these will attain a much larger size when the plant shall have become more fully developed under good cultivation. At present they are produced in pairs, but ultimately more may be borne on each spike, as the seedling plants in stock have not yet attained full vigour. The segments of the flower are of good substance, and are almost exactly intermediate in form between those of the two parent plants. The sepals are linear, oblong, undulated, like those of *C. Loddigesii*, and of a rich rose or rosy-purple tint, softened with the faintest tinge of lilac. The petals are in shape something like those of *C. exoniensis*, and are coloured like the sepals, but a trifle deeper in tint. In the lip, again, the hybrid or intermediate character is well portrayed, the lateral

of October, November, and December especially that our conservatories are most in want of the cheering influences of flowers. I like bright colours during the dull leaden days of winter, when all without is dark and gloomy, and the rich hues of scarlet, rose, crimson, and red are abundantly supplied by zonal Pelargoniums. In March last, I obtained about two dozen of the newer varieties of zonal and nosegay Pelargoniums, all of them growing in small 60-sized pots. As soon as the roots became somewhat pot bound, they were shifted into 48-sized pots, and flowered; and though I had left the selection of varieties entirely to the nurseryman who supplied them, I am bound to say it was so good that there was not one among them which I cared to discard. During the time the plants were getting established in the 48-sized pots, I allowed them to bloom, but as soon as there were signs of the plants becoming pot bound, they were again shifted into 32-sized pots, and the plants cut back, so as to form nice "bottoms," as it is termed. The plants are now thoroughly establishing themselves in the large pots; they are making a vigorous growth, and blooming well and freely

and by keeping them fairly dry I hope to have them in flower up to February. Nor is this all, for when the plants are cut back, the cuttings so obtained are inserted singly in thumb pots, in which they soon root, and are then shifted into small 60-sized pots. Many of these have developed into nice young stocky plants of a vigorous growth, and are throwing up trusses of fine flowers. In the case of both the young and old plants, as soon as they have done blooming they will be allowed to dry off, and in April the soil will be shaken away from the roots, the latter trimmed and put into 48-sized pots, and again shifted into 32-sized pots as before autumn flowering. When the bottoms become too large they can be thrown away, and their place supplied by some of the cuttings struck as above stated. Some of the varieties, too, can be rejected as they become superseded by the superior merits of other types. Some of my favourite varieties are—Wellington, Henry King, very fine crimson flowers of splendid form; Richard Dean, very fine; Harry Turner, fine brilliant red; Lawrence Heywood, Cham, Carrie Cochran, Marchioness of Hertford, Mercy Grogan, Forbury Nosegay, Glitter, and Splendour—all shades of red, crimson, and scarlet; Circulator, very fine; Charles Dickens, a beautiful salmon-rose nosegay, the petals distinctly margined with red; and Polly King, one of the finest salmon-coloured varieties yet raised; these have shades of salmon. Master Christine and Mrs. Keele, both pink-flowered varieties, the former a very free bloomer. Of pure white flowers, or white flowers slightly blotched with carmine, there are Mrs. Sach, Reine Blanche, Alice Spencer, Marginatum, a beautiful variety; Madame F. Hock, and Souvenir de St. Etienne, the purest white zonal I have yet met with. I do not advance this as a complete collection; but I have found the several varieties just enumerated to be very distinct in character, and all are more or less characterised by great freedom of bloom. My last variety is one of the finest zonals I have flowered; it is named Purple Prince, and the rosy crimson flowers, which are of very fine quality, are handsomely tinted with purple. R. D.

BERRY-BEARING PLANTS FOR WINTER DECORATION.

At the last meeting of the Royal Horticultural Society, at South Kensington, one of the most novel, although by no means least interesting, features of the exhibition consisted of the collection of bacciferous plants, staged by three exhibitors in competition for the prizes offered for them. Such plants are very handy, either for the decoration of the conservatory or sitting-room, and have the advantage of lasting in beauty for several weeks, and not unfrequently months, in succession. They are, as a rule, very easily grown, and form an agreeable contrast when grouped tastefully with Chrysanthemums, Cyclamens, scarlet Salvias, and Ferns. Some are well adapted for cutting, and help to create variety in the drawing-room vase, while their value in church decoration of all kinds is well known.

Aucubas.—These, when covered with a crop of shining scarlet fruit, make fine winter decorative plants, and they are easily grown. In mild sheltered localities, small bushes in the shrubbery or private nursery may be fertilised, when in flower, by pollen from the male plants, and these can be taken up and potted in the autumn. Plants in pots generally flower more freely than those planted out, and are handier than the latter for fertilising purposes. Large plants in sunny positions outside have a beautiful appearance when fertilised—an operation which is most readily done, either by grafting a male branch into the female tree, or by setting a male plant in flower in close proximity to a female one. We have now numerous varieties, both green and variegated, which form noble winter decorative plants. Aucubas, like all other smooth and glossy-leaved plants, do well in towns and smoky districts, simply because they are readily cleansed by every passing shower.

Solanums.—These are well-known plants, which are easily propagated either by means of seeds or cuttings in the spring. Young plants may be planted out in a warm sheltered border in May, and if liberally supplied with water, will make clean, fresh, little specimens for decorative purposes during the ensuing winter. They should be carefully lifted and potted in October for removal indoors, and if taken inside and kept in a moist and close atmosphere for a week or so, they will establish themselves and ripen off their bright orange fruits without losing a leaf. *S. Capsicastrum* and *S. pseudo-capsicum* are the most useful, but Yellow Gem is very distinct and effective when well grown, bearing large ribbed or contorted fruit of a bright glossy yellow colour. The Egg plant is very ornamental, and grows well in an ordinary frame or greenhouse. There are both white and purple varieties.

Capsicums.—These, although generally grown for culinary

purposes, are far from being uninteresting as decorative plants. We have several species in our gardens, all bearing bright scarlet or yellow fruits, which contrast well with their deep green foliage. Care must be taken to syringe these and *Solanums* freely when growing, in order to keep red spider in check, a pest to the attacks of which they are very liable.

Skimmias.—These are dwarf shrubs with broad lanceolate smooth foliage, and bear clusters of small Holly-like berries. *S. oblata* and *S. japonica* are both well adapted for pot culture, and look well all winter in a cool house.

Rivina (humilis) lævis.—This well-known stove plant bears small inconspicuous white flowers and drooping clusters of shining berries. Small plants of it in pots are very pretty, or it may be trained up the back wall of a stove, where it will grow, flower, and fruit all the year round, forming an interesting object of permanent beauty. A bright yellow-fruited woolly-leaved species of *Rivina* was introduced by Bowman a few years ago, but it appears to have been lost.

Nertera depressa.—This is one of the smallest, and at the same time, most interesting of all berry-bearing plants. In habit it is very dwarf and spreading, rarely exceeding one inch in height; indeed, it may not inaptly be compared to a plant of *Selaginella densa*, sprinkled with coral heads. The foliage is of the freshest green imaginable, the berries being of a brilliant orange-scarlet. It is readily grown in a light compost of peat and sand either in the stove, greenhouse, or under a glass shade or Wardian case, in the sitting-room.

Cotoneasters.—These include some of the finest of all hardy berry-bearing shrubs for planting along a sunny wall. *C. Simmondsii*, trained up the front of town houses, along with small green-leaved or gold and silver variegated Ivies, forms a brilliant picture in the autumn and winter, when studded with bright scarlet berries, the latter being very freely produced along its slender branches. *C. microphylla*, a well-known small-leaved evergreen species, bears berries of a deeper crimson, and is one of the most useful wall shrubs we have. Trained up the front of a house, or over the porch or balcony, it has a cheerful appearance even in the depth of winter, and is particularly beautiful when the ground is covered with hoar frost or snow. It also does well as a low bush on the lawn, if cut in closely every year. Of this, Lindley says, "Its deep glossy foliage, which no cold will impair, is, when the plant is in blossom, strewn with snow-white flowers, which, reposing on a rich couch of green, have so brilliant an appearance that a poet would compare them to diamonds lying on a bed of emeralds."

Ardisia.—This is one of the prettiest of all pot plants when well grown. It is easily propagated by means of seed, and plants about a foot high bear nice crops of berries the second year. Seedlings should be potted off in loam, leaf-mould, and sand, and if placed on a shelf near the glass in a moderately warm greenhouse temperature, they make dwarf vigorous little plants. Even when not in fruit the plant is ornamental, its oblong foliage being of a rich glossy green colour, elegantly wavy or crenate along the margins. The species common in gardens is *A. crenulata*, bearing bright scarlet or crimson fruit the size of Peas. There is, also, a yellow-fruited variety, well worth growing for variety, although not so effective as the normal kind.

Pernettyas.—These are pretty little shrubs for pot culture; in habit they closely resemble the *Cotoneasters*, and, like those plants, have deep green glossy foliage and a rich profusion of berries during the autumn and winter months. For greenhouse, conservatory, or drawing-room decoration they are invaluable, taking the same place indoors that the *Cotoneaster* occupies outside. I have only seen three species, all of which are beautiful. *P. mucronata* bears deep crimson berries, something like those of *Cotoneaster microphylla* in both size and colour. *P. microphylla* bears immense crops of purple or lilac berries, and is, perhaps, the most distinct and ornamental of the whole group. *P. speciosa* is very dwarf and compact in its growth, and bears deep crimson berries.

Cratægus Pyracantha (Pyracantha japonica).—For covering the fronts of town houses, or the side walls of greenhouses or stoves, nothing can be prettier or more effective than this plant, especially if trained among gold, silver, or green-leaved Ivies. It may be freely propagated by means of layers, and small plants from 2 to 3 feet high bear heavy crops of brilliant scarlet berries. Nearly all glossy-leaved plants do well in towns for reasons already stated, and for such purposes this plant is one of the best.

Callicarpa purpurea.—This is an old greenhouse plant, well deserving cultivation, although rather straggling in habit. Its shoots are clothed with opposite serrate leaves, and it bears axillary clusters of small purple or amethyst-coloured berries very freely. It may be propagated freely, either by means of seeds or cuttings,

and young plants grown as recommended for *Ardisias* are best; old plants lose their bottom foliage, and become "leggy" and unsightly.

Leucocarpa alata.—If grown in a poor, sandy soil, and fully exposed to the light, this makes dwarf plants 1 foot to 18 inches in height, and as much through. It has light green foliage, and thick winged stems, and, when well grown, bears heavy crops of white berries. If grown in rich soil it is little better than a rank-growing weed, but, treated as above, it makes a variety—white-berried plants being rather scarce.

Berberries.—Among other large-growing hardy berry-bearing shrubs we must not forget the common *Arbutus*, with orange-scarlet, and *Berberis Aquifolium*, with bluish-purple fruit in massive clusters. *B. vulgaris*, having elegant drooping clusters of bright scarlet oblong berries, forms a noble object on the margins of shrubberies in warm sandy soils, during the autumn months. The berries of both the last-mentioned species are often preserved in syrup, or in salt, for garnishing purposes during winter. Hollies are too well known to need much comment, but small bushes, 2 to 3 feet high, may be grown in pots, or taken up from the outside and potted, when they come in usefully for the decoration of churches, front halls, conservatories, or even for ordinary apartments during the Christmas season. The common Snowberry bears heavy crops of large pearly-white fruit in some districts, and these cut from the plant and tastefully grouped in bunches, wreaths, or vases, along with the fruit-bearing branches of Hollies, *Berberis*, *Solanums*, *Cotoneasters*, *Cratægus*, and the bright-coloured autumnal foliage of Maples, *Berberis*, and Oaks have a highly pleasing appearance, while they are specially valuable for church decorations of all kinds. We have many other fruit-bearing plants, but the above list comprises the best known for decorative purposes during the winter season.

F. W. BURBIDGE.

BOTTOM-HEAT FOR ORCHIDS.

Bottom-heat is advantageous to all kinds of plants, whether applied artificially or naturally. It is, however, seldom used for Orchids; but I have for some time grown all that come to us from the east in bottom-heat, and I find that the foliage acquires increased vigour under such treatment, while the roots are at the same time developed in greater profusion than under any other kind of management. The genera *Aërides*, *Saccolabium*, *Phalænopsis*, &c., all grow in bottom-heat with a vigour which is quite surprising. Hitherto I have set the pots and baskets upon the bottom-heat about the month of February, and have kept them there until the first or second week in August. They are then removed and placed on shelves, or on the ordinary benches of the Orchid house, where they are kept somewhat dry, and allowed to harden and ripen their growths. During the late autumn months very little moisture is given them, and very little artificial atmospheric heat—a course of treatment which enables them to bear with impunity the dull months that intervene between August and February. I find that bottom-heat not only accelerates the growth, but that it also enhances the flowering properties under its influence; the flower-spikes are larger, and much brighter in colour than they otherwise would be. I am now speaking of established Orchids; newly-introduced ones require to be gradually brought into a condition to withstand bottom-heat, which, when once applied, is kept up until the growths are completed. Then they should have a season of rest, as in the case of established plants; and I feel assured that, when bottom-heat comes to be universally adopted for Orchids, we shall cease to hear complaints of failures or of tardiness in growing and establishing specimens of them.

The following is a list of such as I have found to succeed well under this treatment, viz. :—

<i>Aërides</i>	<i>Cattleya</i>	<i>Lælia</i>	<i>Oncidium</i>
<i>crispum</i>	<i>Skinneri</i>	<i>purpurata</i>	<i>macranthum</i>
<i>Lindleyanum</i>	<i>Warneri</i>	<i>Linatoides</i>	<i>Wiltoni</i>
<i>Warneri</i>	<i>Cypripedium</i>	<i>rosea</i>	<i>Phalæopsis</i>
<i>Angulosa</i>	<i>barbatum</i>	<i>Odontoglossum</i>	<i>grandiflora</i>
<i>Clowesii</i>	<i>caudatum</i>	<i>Alexandra</i>	<i>Luddemannii</i>
<i>Calanthe</i> , various	<i>hirsutissimum</i>	<i>maculatum</i>	<i>Saccolabium</i>
<i>species of</i>	<i>Stonei</i>	<i>Pescatorei</i>	<i>ampullaceum</i>
<i>Cattleya</i>	<i>Dendrobium</i>	<i>Phalænopsis</i>	<i>giganteum</i>
<i>intermedia</i>	<i>aggregatum</i>	<i>roseum</i>	<i>Vanda</i>
<i>Leopoldii</i>	<i>Bensoniæ</i>	<i>triumphans</i>	<i>Bensonii</i>
<i>maxima</i>	<i>chrysanthum</i>	<i>Oncidium</i>	<i>giganteum</i> , and
<i>Mossii</i>	<i>fimbriatum</i>	<i>Krameri</i>	many others.
<i>Schilleriana</i>	<i>nobile</i>		

Epsom.

RANSLEY TANTON.

THE GARDENS OF ENGLAND.

STREATHAM HALL.

AMONG halls of recent formation, that of Mr. Richard Thornton West, Streatham Hall, is certainly one of the most interesting. Streatham Hall is about two miles from Exeter, and the situation which it occupies is as undulating as could be desired for landscape purposes. A few years back, Mr. West purchased the property, and finding that the residence on it would cost much to remodel, he decided to replace it with a new one, which is built upon nearly the same site, but is upon a much more extensive scale, and is certainly one of the finest mansions in the county. The rise in the ground from the entrance lodge (a very appropriate building) to the higher points of the pleasure grounds (some half mile distant) is several hundred feet; midway, hewn into the side of the hill, stands the mansion, surrounded by terraced gardens necessitating architectural support and connection, but not so overlaid with mural ornament as some such places are. In fact, here was scope for vases and sculptural ornament to any extent, but Mr. West has eschewed them, leaving his gardener to clothe such places with plants and flowers. This Mr. Beddard has done with great taste, and in a manner which is deserving of special record. Although the place is old, the garden is new, with the exception of what is set apart for edible produce. Now the aspect of all new gardens, for the first two or three years after they have been made, is anything but cheering, owing to their bareness, and hence common things are planted thickly to screen the nakedness of the land, which common things grow up, and choke and crush out their more aristocratic neighbours. At Streatham, Mr. Beddard has pursued an entirely different course; though only planted some three or four years ago, from one end of the pleasure gardens to the other there is scarcely a naked yard of earth to be seen except in the "beds for bedding," and possibly round a newly-planted specimen; and here, let it be observed, we are not speaking of a villa garden, but of one of little less, if not more, than 20 acres in extent, and hence the experiment was a daring one. But Mr. Beddard has lived long enough to know that a thing well done is twice done, and, profiting by this, he determined to prepare the ground properly, and to put in his permanent plants at distances that will suffice for many years to come, and has "filled up" with more common things. But, from one end of the garden to the other, nearly the whole of the plants stand upon closely-shaven turf, sufficiently far apart to enable the Grass to be kept in order without injury to the plants. Mr. Beddard has not planted large plants; he knows that, in the plant world the race is not always to the strong, and that the instalment of immediate effect gained by planting specimens, is purchased at much cost. Nice healthy, well-rooted, and carefully lifted plants, 20 to 30 inches high, with the ground properly trenched and prepared, are more certain of ultimate success than large plants ever can be. Two or three years back in a garden in the midland counties, many thousands of pounds had been expended in transplanting large specimens, and when the trees had been planted twenty years, we measured some scores of them and in every case of timber trees the young ones were larger than the large transplanted ones, and, of course, far more vigorous, and would make more timber in the future. The gain, then, is merely nominal, and you pay for it in thousands where hundreds would suffice. If a planter has a *penchant* for planting, like the late Earl of Harrington, and can afford to pay, let him do so; but when you come to pounds, shillings and pence, and the gardener is expected to produce the *quid pro quo* for the money expended, then the question assumes a very different aspect. The system of cramming valuable plants together, as we see it carried out in many places, is no credit to anyone concerned—landscape gardener, contractor, or proprietor. Mr. Beddard has no sympathy with management of that kind; he likes plants 20 to 30 inches high, thoroughly well established, and removed with care; and with such Mr. West's place has been planted. Success could not be more complete than it is here; if there is a hitch it is where a few large plants have been introduced as "starers," and while all of these may be

considered to be more or less "crippled," the youngsters are daily accumulating strength. Some of the Conifers have made remarkable growth, especially the Cypresses; while some of the young specimens of *Cupressus Lawsoniana* and others are masses of vegetation, more elegant than a tropical Fern, and yet, withal, hardy as the climate of Devonshire requires. Yet with all this, several specimens of *Pinus Nordmanniana*, in an exposed situation, refuse to grow; while *P. lasiocarpa*, *Douglasii*, and some others do not flourish. Is it that these natives of the Crimea and of Northern California require a colder climate? In the midland counties they are thoroughly at home; in Devonshire, they certainly are not. The terraces at Streatham Hall rise to a considerable height, until, in fact, they lose themselves in wild wood at the higher point of the pleasure grounds. But, beyond this, there is a still higher point, and in a field above, or rather beside, the kitchen garden, is a view which gives a command, not only of the more beautiful parts of Devonshire, but of many parts of the surrounding counties. Anything more perfect than this panorama it would be impossible to conceive, as one sees it now, glowing in rich autumnal tints, and stretching away over tens of thousands of acres.

The kitchen and fruit garden are near the highest part of the gardens, the ground sloping considerably to the east, and having the advantage of the morning sun. It is not large in extent, nor very rich in soil; but it contains some superior kinds of fruits, which do exceedingly well. The glass erections are numerous, consisting of Vineries, Peach houses, Pine stoves, plant houses, &c.; but, though new, not of the most modern construction, and, though strong, not elegant. In these Mr. Beddard is very successful, growing Grapes—and, in fact, all other things—in first-class style. Here we saw, for the first time since its distribution, Muscat Champion as black as the Hamburg, and the Mrs. Pince Muscat rivalling Alicante and Lady Downes in the intensity of its colour, and superior to both in the quality and keeping properties of its fruit. Here, also, Madresfield Court was good, very good, both in colour and quality; but Golden Champion, Raisin de Calabre, and some other white varieties, are a little liable to spot. On the whole, the Vines at Streatham Hall are in a very promising condition; and as Mr. Beddard, like Mr. Montgomery Henderson at Coleorton, places his faith in a free admission of air, there can be no wonder that his Grapes are good. The Peach trees are very excellent—though, of course, now leafless. A long house, at one time devoted to orchard house purposes, has been heated and converted into a plant stove, and contains a rich collection of flowering and foliage plants and Ferns. In it *Peristeria elata* was blooming finely, and had been for a long time, and some plants of *Adiantum Farleyense* were as fine as could be desired. There is a large conservatory a short distance south of the mansion, and a number of minor houses. On the whole, Streatham Hall, with its spirited proprietor and able gardener, backed by the climate of Devonshire and grand fruit-forcing situation, promises to become a place of mark, especially for superior fruit. Before concluding, we may remark that the houses, though comparatively new, have been already glazed twice. First thin glass (13-oz.) was put in, and it scorched everything. Recently 26-oz. sheet has been substituted, and it has to be shaded. Of course, we speak of clear glass; and, with such evidence cropping up, we may ask, "Is Mr. Henderson, of Thoresby, far wrong in recommending permanent shade for it?" P. A. W.

The Postage of Plants, &c., in the United States.—

On pamphlets, occasional publications, newspapers, magazines, and periodicals, hand-bills, posters, sheet-music, unsealed circulars, prospectuses, book manuscript and proof-sheets, printed cards, maps, lithographs, prints, chromo-lithographs, and engravings, seeds, cuttings, bulbs, roots, and scions—one cent for each 2 ounces or fraction thereof—weight of package limited to 4 lbs.

Boiler Incrustations.—It may be worthy of note that the Bearberry (*Arctostaphylos Uva-ursi*), boiled in a boiler which is much incrustated, will remove the "scale" in a very short time. Specimens of the powder, and of "scale" removed by it, may be seen in the Kew Museum (No. 1). The preparation is sold under the title of Armitage's Vegetative.—J. B. Q.

THE FLOWER GARDEN.

M. SOUCHET'S NEW GLADIOLI.

Few flowers can compete with, and none can surpass in distinctive grace and beauty this family of autumn-flowering plants. Commencing with the stout old *Gladiolus gandavensis*, the successive and successful intercrossings of skilled hybridisers have eventuated in results even beyond expectation. In the first rank of those who have brought the *Gladiolus* to its present high state of perfection stands M. Souchet, the eminent French cultivator, from whose list of the best varieties we have selected the following:—

Albion.—Spike very long, broad, and fine. Flowers extra large, white, delicately tinged with lilac, and sometimes shaded with carmine. This is a kind of unusually high growth, and well fitted for the centres of flower-beds and groups of plants of vigorous growth.

Amalthee.—Spike very handsome, and well furnished with large pure white flowers, spotted with rich violet-red; throat of a violet-velvet; the lower divisions slightly tinged with lilac. Grows to a medium height.

Ambroise Verschaffelt.—Bears a splendid spike of beautifully formed white flowers, tinged with pomegranate-rose, and marked with large rosy spots. This is a most effective plant.

Arethuse.—Bears a spike of well-formed white flowers, lightly tinged with rose-colour, and streaked with light carmine.

Asmodee.—Flowers in a handsome spike of a brilliant purplish cherry-red, edged and tinged with pomegranate red, and marked with large white spots and rays. A variety of very remarkable and weird appearance.

Belladonna.—Flowers in a handsome spike of a light lilac colour, the lower divisions marked with bright carmine lines. The habit of this plant is quite distinct and novel, and its aspect is particularly pleasing and lively.

Cassini.—Spike long and handsome, with beautifully-arranged flowers above the average size, of a fine rose-colour shaded with carmine, the lower divisions streaked with carmine on a light ground. A very effective plant.

De Mirbel.—Bears a long and broad spike of perfectly-formed and very large open flowers of a handsome rose-colour, slightly tinged with lilac or violet, on a very light ground, streaked and shaded with carmine—a very remarkable effect of colour.

Le Tintoret.—Bears a very long and handsome spike of well-opened flowers of a fine cherry-red, shaded with carmine at the edges, and marked with carmine spots on a yellow ground. A very vigorous-growing and effective plant.

Le Vesuve.—This variety is distinguished by its very long, handsome, and tufted spike of flowers, which are of a fine brilliant red colour, and most dazzling and effective. It is a late-flowering variety, very vigorous in growth, and one of the very finest.

L'Unique violet.—Bears a very large spike of extra large flowers of a dark lilac-colour, tinged with violet and shaded with dark carmine; a vigorous-growing plant, the flowers of which are of the most charming and lively appearance.

Merveille.—Flowers of a handsome cherry-red, slightly tinged with violet, edged and shaded with dark carmine, the light coloured centre giving them a very singular and pleasing effect.

Murillo.—Bears a splendid spike of extra large flowers of fine cherry-red on a very light ground, all the divisions marked with lines of pure white, the lower divisions marked with a large white spot. A most effective plant.

Ondine.—Bears a long spike of evenly-arranged flowers of a white colour, tinged with lilac and marked with small spots of dark violet, lightly shaded at the edges with very bright lilac-crimson. A most beautiful variety.

Psyche.—Flowers in a very large spike of a delicate frosted rose-colour, edged and shaded with dark carmine; centre very light.

Sirene.—Flowers of a very light and delicate rose-colour, slightly tinged with orange; lower divisions very broadly marked with red spots on a yellow ground.

Triumphans.—Flowers in a very long and handsome spike of a cherry-red colour, tinged with gooseberry green. A most effective kind for contrast.

Variabilis.—Bears a long spike of extra-large flowers, of a pure white colour, sometimes tinged with lilac; bottom of the throat violet. This variety has a very branching habit, and is well adapted for the centres of flower-beds or for mixed borders.

The most singular of the foregoing varieties is *Asmodee*, the flowers of which, as M. Carrière says, exhibit "*une nuance infernale exceptionnelle*" (a strange other-world hue). Some of them produce semi-double flowers, but these are no improvement on the simple beauty and exquisite colouring of the single-flowered kinds.

FUNKIAS.

DURING the past few years, the different species of Funkias have gained great popularity with gardeners, owing, in a great measure, to the extensive use made of some of them in the London parks and other places where what is known as sub-tropical gardening is carried out. This, anyone acquainted with the genus, will not be surprised at, for, to the value of its species as fine-foliaged plants, they also add the good quality of being free and handsome-flowering herbaceous plants, all of which produce spikes of bell-shaped flowers. Another point in favour of plants of this kind is that they thrive in almost any soil, although, like many others, they are seen to the greatest advantage when grown in well-drained sandy loam. All the species are easily multiplied by means of division, an operation that may be performed either in spring or in the autumn. One of the most useful and ornamental species of this genus is *F. Sieboldii*, a plant which is known in gardens under various names, the most common of which are sub-cordata and glauca. It grows from one to two feet in height, and has large, somewhat heart-shaped, glaucous leaves, and bluish or pale lilac flowers. Good sized tufts of this are very imposing in borders or on turf, and beds of it are likewise attractive—a fact proved by some that have been planted in Battersea Park within the past few years. It may also be used advantageously in mixed beds of foliage plants, such as *Melanthus major*, *Acanthus latifolius*, the dwarfed Cannas, &c. *F. japonica*, commonly known in gardens as *F. grandiflora*, of which we give an illustration, is a species

*Funkia japonica.*

which grows from 12 to 18 inches in height, and which produces numerous large, handsome, pure white, sweet-scented flowers in August and September. Its leaves are of a clear pale green, and are much smaller than those of the preceding kind. In some places this species is used as a flowering plant for edgings; but it is seen to the greatest advantage when planted in tufts, in beds or borders, in a well-drained sandy loam. Another desirable kind is that known as *F. ovata*, which forms a neat tuft from 15 to 20 inches high. Its leaves are large, broadly oval in outline, pointed at the tip, and of a dark shining green colour. This makes a useful edging plant for sub-tropical beds or borders. Besides the above, which are all quite distinct, there are numerous variegated kinds that form desirable edging plants. Of these I would recommend the varieties of *F. ovata*, *lanceifolia variegata*, and *albo-marginata*.

T. S.

A TRIAL OF EARLY CHRYSANTHEMUMS.

IN the spring of the present year I determined upon an experiment in trying to bloom Chrysanthemums in the open ground, far away from any wall or other shelter. I had often read about their use as autumnal flowers, and how gay the gardens were in the neighbourhood of London. In the north of Yorkshire, only about twelve miles from the county of Durham, where I reside, Geraniums and the other plants used for summer bedding are generally cut down by frost about the middle of September. When these are cleared away, the flower beds present a very desolate appearance long before real winter weather sets in. My idea was to try early-blooming Chrysanthemums to fill up the void, and make the garden gay with

flowers up to about the middle of November. I made inquiry for early-blooming varieties in the neighbourhood of London, and amongst the secretaries of the various Chrysanthemum exhibition societies, and the following varieties were ultimately sent to me for trial in the north of England. The following plants and cuttings were sent to me by parcel post, viz.:—Cardinal Wiseman, Jewess, Prince of Anemones, White Cedo Nulli, Empress of India, Fanny, Hereward, Mademoiselle Martha, Lord Derby, Golden Button, Queen of England, Bob (the old sort; there is a new one of the same colour), Little Bob (the new variety), Illustration, Lilac Cedo Nulli, Mr. Astie, Mrs. G. Rundle, Dr. Sharpe, Mr. Wynes, Argentine, Darnlet, Mr. Evans, Gloria Mundi, Antonius, Fanny, Pio Nono, Alfred Salter, St. Thais, Venus, Golden Cedo Nulli, Salamon, Arigena, Prince of Wales, Mrs. Murray, Aurea multiflora, Roqueiere, Rotundiflora, Mexico, Miss Nightingale, Golden Dr. Brock, Scarlet Gem, Jardin des Plantes, Lady Hardinge, Annie Salter, Prince Alfred, Beverley, Golden Beverley, Little Harry, Chevalier Domage, Guernsey Nugget, Madam Roussellon, Iris, Bijou d'Horticulture, Madame Montells, Marie Stuart, and Danæ.

As regards the collection of varieties sent to me, there is no doubt that it is an excellent one, and that it embraces all the best sorts suitable for open air culture, and that these varieties both are and can be bloomed in the gardens around London there is no manner of doubt. The report of my trial to bloom Chrysanthemums in the open air in the north of England is failure—the climate is too cold. The plants grew away vigorously; I gave them every chance to bloom, as I did not stop or cut back any of the shoots; they had a fair trial, plenty of water, and occasional doses of liquid-manure; they showed bloom buds in October, which were thinned out plentifully, but all my efforts failed, with the exception of seven varieties. These bloomed very early, and were very beautiful; they continue in bloom at the time I am now writing, October 27th, and give me great pleasure. I feel rewarded for all my trouble. For the guidance of others, I give the date that each variety came into bloom. They were planted out in an open situation.

Jardin des Plantes.—A Pomponne, little more than a foot high; colour a bronzy-red, not quite so dark or so bright as Little Bob. It commenced blooming on July 20th, is in bloom now, October 27th, and will continue giving flowers throughout November. As far as my experience goes, this is the earliest blooming Pomponne Chrysanthemum known. There is another Chrysanthemum in the catalogues, called Jardin des Plantes, a large-flowered variety; colour, orange-yellow.

Little Bob.—A Pomponne, another Lilliputian; a new variety, not to be confounded with Old Bob, so well known. This plant is a foot high, and a capital one for pot culture as a window plant. The colour is a rich dark crimson-maroon, brilliant, and it forms a complete mass of bloom. The bloom buds should be thinned in June. It commenced blooming on July 25th, and has continued to bloom ever since that date. This and Jardin des Plantes were sent to me by Messrs. William Clibran and Son, of the Oldfield Nursery, Altrincham, Cheshire.

Illustration.—A Pomponne; grows 2 feet high; colour a delicate pink. Commenced blooming on the 20th of August, and was a complete mass of flowers on the 15th of September. This variety, I believe, is not yet in the trade. It was sent to me by a gardener at Halifax, who said he had seen it in bloom in Cheshire the previous September.

Scarlet Gem.—A Pomponne, 2 feet high. Saw the first bloom on the 13th of September; in full bloom on the 1st of October. Colour, a bright golden yellow; a very beautiful and showy variety. Why it is called "Scarlet Gem" I cannot imagine, unless it is on account of the blooms, when half open, having a rich red or scarlet appearance. Sent to me by one of the secretaries of the London Chrysanthemum Society.

Golden Button.—A Pomponne, 18 inches high; colour, pure white, with a small yellow centre; the flowers of good size for a Pomponne; appears to be a hybrid from a large-flowered variety—distinct and showy. First bloom appeared on September 12th; in full bloom October 1st, and will continue blooming till very late in the season.

Mexico.—A Pomponne; height 2 feet; colour, pure white; came into bloom October 4th. This is no doubt a very early variety, but the cuttings were sent to me rather late in the spring. Golden Button and Mexico were sent to me by Messrs. Clibran, of Altrincham.

Argentine.—Pomponne, 3 feet, white; I saw first bloom October 23rd. This wants further trial, but it grows too tall for bedding. I am quite convinced that the six first named and described will be very useful for bedding after Geraniums are cut down, and that they are sure to bloom as early as I have stated. They should be grown in pots, if intended to succeed summer bedding plants, and after the

Geraniums are taken up, the Chrysanthemums, in their pots, could be plunged in the same holes. The work will be more easily done if my practice is followed. I generally grow a good many scarlet and pink Geraniums in pots, and at bedding out time, in May, I plunge the pots with the plants in the beds; the plants bloom well, but do not grow with so much vigour as those planted out of pots, but much trouble is saved, as the pot plants are merely lifted out of the holes, and pot plants of Chrysanthemums placed in their stead. When the bed is raked over, and all made tidy, the Chrysanthemums really look very gay. This season I had only plants to complete one bed, which was mixed with plunged pot plants of *Euonymus radicans variegatus*—a new dwarf evergreen plant from Japan, now easily procurable, and cheap. It is remarkable that in my trial of so many early-blooming Chrysanthemums none of the large-flowering section came into bloom. Mrs. George Rundle was the earliest, but the buds never opened. I pinned *Arigena* to a south wall, but could not get the buds to open. It is plain that we must at present look for Pompones only as early-blooming varieties. The season for my experiment was against my success. The summer here was very dry from May to August, and I had to water my plants very often. In some parts of the country they were deluged with rain. At the present time I have to water my Chrysanthemums. The land is so dry that many farmers cannot plough their fields, and frost here has been very severe. The first frosty night was September 6. On the 8th, we had 6° of frost; 22nd, 7° of frost; 29th, 6° of frost; on the 30th, 8° of frost; October 9th, 9° of frost; 14th, 9° of frost; 15th, 1° of frost; 16th, 6° of frost; 19th, 5° of frost; 21st, 10° of frost, the roads frozen hard, and ice much thicker than a five-shilling piece; on the 25th, 12° of frost, a severe night, and ice nearly a quarter of an inch thick; on the 26th, 10° of frost; and on the 27th, 12° of frost. With such weather to contend with, it was almost impossible for the late varieties to open their bloom buds. I have been promised a few more varieties of the early-blooming Chrysanthemums which have bloomed last September, and I hope in time to get a collection of really useful free-blooming sorts that will make the flower garden gay in favourable seasons throughout October and November, and enable me to cut flowers from the open ground during the month of November. H. T.

The Flame Flower (*Tritoma Uvaria*), Rabbit-proof.—This autumn-flowering plant is too well known to need description; it may not, however, be generally known that it is rabbit-proof. No hesitation need therefore be felt at planting it extensively in semi-wild situations, or in shrubberies to which rabbits have access. In such places this *Tritoma* might be planted in masses sufficiently large to be effective. By the margins of water, too, when in flower it is strikingly beautiful, and that at a time when one least expects to meet with a fine display of blossom. When intermixed with Pampas Grass, *Arundo conspicua*, or dotted about in Rhododendron beds, its tall spikes of fiery red flowers are set off to excellent advantage, and it succeeds admirably in well-drained boggy soil. It is very hardy, but in severe winters an armful of leaves or Fern will preserve it from injury.—J. T., *Maesgwynne*.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Abutilon Thompsonii and Iresine acuminata as Bedding Plants.—Of these the *Abutilon* has this autumn been really common. Two of the centre beds in one of the flower gardens here consisted of a mass of *Iresine acuminata*, freely dotted with this *Abutilon*, which grew well up above the purple foliage of the *Iresine*, and the contrast of colours so well harmonised that the effect was lovely.—Edward BENNETT, *Hotchkiss*.

Flowering of *Agave yuccaefolia*.—M. Chénier records the rare event of a specimen of *Agave yuccaefolia* flowering in the open air in the north of France. This plant was potted in September 1872, in a mixture of spent hot-bed manure and leaf-mould, and kept in a warm house until last June, when it was removed to the open air. In August the flower stem commenced to grow from the centre and increased rapidly in length until, by the 20th of September, it had attained a height of 12 feet. At this point its growth ceased, and two days afterwards the flowers began to appear, forming a spike 32 inches in length on the upper part of the stem. Each flower consists of six divisions, of a greenish colour at the base and yellowish at the points. Interspersed among the flowers are a number of small brownish bracts, which secrete an abundance of gummy liquid that has a sweet taste but very disagreeable odour.

Wall Plants.—What evergreen plants would you recommend to cover the south wall of a large country house in West Muttia, and what Roses would be best for the purpose?—Sonsbecker. [A good evergreen for the wall on the southern side of your house would be the Exmouth variety of *Magnolia grandiflora*, and in such a situation you might also plant *Myrtles*, *Crataegus Pyracantha*, the brilliant red berries of which are most effective; *Ilex latifolia*, a plant with dark green leaves, almost as fine as those of a *Magnolia*; the blue-flowered *Ceanothus azureus*; Irish Ivy; and the sort known as *Hedera crenata*, a kind which has very large leaves. *Cotoneaster microphylla* and the common *Laurustinus* also both make very desirable wall plants. Of evergreen Roses, choose some of the different varieties of *Rosa sempervirens*, which bloom freely in clusters. But, in addition to these, we would recommend you to plant such kinds as *Marechal Niel*, *Climbing Devonianus*, *Gloire de Dijon*, *Madame Lévê*, *Bede Lymanse*, and *General Jacqueminot*. These, though not evergreen, would, when in flower, be very effective.]

VEGETATION OF THE WEST COAST OF AFRICA.

ALONG the coast, within the line of reef, the water is smooth as the surface of a mirror, and clear as crystal. In most places it is of considerable depth to within a few feet from the shore; yet, as we pass along in a boat beneath a green-arched canopy, formed by the overhanging branches of the tall trees that grow (inclining seaward) close down to the water's edge, and which completely screen us from the sun's rays, we can distinctly see the bottom as we look over the boat's side and watch the fishes of strange form and of every brilliant hue, which swim about and dart to and fro amidst the fantastic growth of coral and seaweed. The extremities of the branches of these tall overhanging trees dip into the sea far beyond us, and thus form a cool, shady, water colonnade, through which we may often pull for miles perfectly sheltered from the fierce heat of the sun without. On shore we cannot walk many yards in any direction, unless immediately in the vicinity of a town, without penetrating into the dense jungle, composed of tropical trees, and shrubs, and plants of every variety. We meet with huge giants of the forest, whose gnarled trunks are often 6 or 8 feet in diameter, and sometimes more, and beneath whose arched roots—grown out of the ground in the course of centuries, and thick as the trunks of ordinary trees—we may sometimes pass without stooping. Clinging to these huge trees, climbing round their trunks and twining amongst their branches, are innumerable broad-leaved parasites, of every colour and of every fantastic form, and intermingled with these are Bamboos, and Plantain trees, and Lime bushes, and strange trees and plants, and shrubs, and flowers unknown to temperate climates, and which it would need a skilful botanist to classify. Enormous thorny Cactuses of ungainly shape and form, thickly covered with flowers, bestrew the ground, stretching in every direction and rendering it difficult and dangerous for the passenger to thread his way amongst them. This, however, soon becomes impossible, by reason of the density of the jungle itself. Thorny bushes and plants and prickly branches bar the way in every direction, and effectually oppose the passage of all, save the wild beasts, and birds of gorgeous plumage, and venomous reptiles, that make it their constant abode. The eye of the stranger, however, is never weary of gazing upon the endless variety of strange fantastic foliage and the gorgeous colouring of Nature manifest everywhere throughout this region. Obligated to retreat from the jungle, the stranger threads his way here and there through beaten paths, trodden by the natives in their passage from their villages to the coast, continually to fall in with, as he proceeds, some new and beautiful, and, to him, marvellous variety of vegetation. He sees Limes, and Cocoa-nuts, and Plantains, and Bananas, and Shaddockes, and Custard-apples, and Mangoes, and Guavas, and Pine-apples, and almost every description of tropical fruit, growing in wild luxuriance around him, and to be had for the gathering. Rivers and streamlets abundantly intersect the soil, and add beauty to the scenery, while, in the far distance, the prospect is everywhere bounded by lofty mountains towering to the sky, and stretching away more and more distant, until the grey shadowy outlines of those farthest off are but dimly visible. The British settlements on the sea coast are equally agreeable to the eye. Sierra Leone lies along the summit of a low range of cliffs, and overlooks the wide Atlantic. On either side of its broad, smooth, level streets, formed of reddish loam and sand, beaten till it is hard as rock, stand pretty white villas, with green verandahs and balconies, and sloping reddish-brown roofs, each separate from the other, and standing in its own green, well-shaded, trimly-cultivated grounds. Such is the aspect of the West Coast of Africa, from Cape Palmas in the north to fifteen or twenty degrees south of the equator. But, unhappily, there is a reverse side to the picture. During four or five months in the year the sky is clouded, and rain falls in torrents almost incessantly. Tornados and white-squalls are frequent, and houses are unroofed and trees uprooted by their violence. The rivers and streams are swollen, and the soil is inundated by their overflow, and when the fierce hot sun does shine forth, it raises a mist which is poisonous to inhale.

FROST WORK.

These winter nights, against my window pane,
Nature, with magic pencil, draws designs
Of Ferns and blossoms, and fine spray of Pines,
Oak-leaf and Acorn, and fantastic Vines,
Which she will make when summer comes again;
Weird arabesques in silver, flat and cold,
Like curious Chinese etchings By and bye,
Walking my leafy garden as of old,
These frosty fantasies shall charm my eye
In azure, damask, emerald, and gold.

—T. B. ALDRICH, in "The Atlantic Monthly."

THE GARDEN IN THE HOUSE.

TABLE DECORATIONS.

WHAT can be more charming at this season of the year than an elegant arrangement of cut flowers on the dinner table? and just at present there are many plants in flower that are well suited for that purpose. With such as Chinese Primulas, Heaths, Roman Hyacinths, *Eucharis amazonica*, Camellias, Begonias, &c., at hand, we have no excuse on the score of want of material; we should, therefore, think of the best mode of arranging it with good effect. I was staying with some friends a short time since, and the floral arrangement of their dinner-table struck me as being very elegant. I shall, therefore, endeavour to describe it. The table was oval, of sufficient size to dine eight or ten, perhaps more. In the centre was a handsome silver epergne for flowers and lights. Its shape was that of a rustic branch, supporting on the top a glass dish or tazza for flowers, and under it were four branches for wax lights, but here was the only fault; the branches were not long enough to be in keeping with the size of the tazza, and so the heat from the lights shrivelled some of the Ferns that were close to them. The tazza was filled with white Chrysanthemums, scarlet Begonias, Gloxinias, Chinese Primulas, sprigs of Coleus (dark with bright green margin), and, round the edge, mixed Ferns drooped down in the form of long fronds of different kinds. The only improvement I could have suggested would have been a long spray of *Lygodium scandens* or japonicum twisted through the frosted silver leaves and stems. Round this centre piece were several specimen glasses filled with scarlet and white Begonias, different varieties of Chinese Primula, Gloxinias, and Maiden-hair Fern (*Adiantum cuneatum*). This arrangement was light and elegant, took comparatively few flowers, and did not intercept the view across the table in the least, a great point to be observed in all descriptions of table decoration. That of the breakfast table consisted of—in the centre a flat tazza on a base about 6 inches high. Out of the tazza rose a slender glass trumpet, and on each side of this were two vases of china, in the shape of hands holding cornucopias. The centre stand was filled with flowers similar to those used in the epergne, the principal colours employed in the smaller ones being white and purple, and the flowers, Begonias, Gloxinias, and Primulas; the foliage, Ferns and Coleuses. The purple and white looked very charming by daylight, the purple showing up well against the opaque ground. Flowers can at all times be obtained suited to every one's means; I am speaking of those who live in towns, or have no glass houses or gardens of their own. In Covent Garden may be had Camellias, *Eucharis amazonica*, Gloxinias, Chinese Primulas, Cyclamens, Begonias, Roman Hyacinths, Pelargoniums, Roses, Chrysanthemums, Violets &c.; with such flowers as these, elegant stands and vases can be arranged. Suppose we require a small vase for the drawing-room; in that case I should select a small flat glass dish with a trumpet in the centre; round the edge I should put some Fern fronds of different kinds; in the tazza four blooms of *Eucharis amazonica*, four tufts of Neapolitan Violets, a few sprays of white Begonias, and three or four fronds of Maiden-hair Fern; in the trumpet I would place Roman Hyacinths, Neapolitan Violets, Maiden-hair Fern, and a spray of *Lygodium scandens* brought down and twined round the stem. If for the evening, I should put in a few pips of scarlet Pelargoniums to give colour, which would be required under artificial light, as it is well known all mauve and grey shades change for the worse under such circumstances. Permit me here to direct attention to the usefulness of the bloom and berry of the *Arbutus* for decorative purposes; if the blooms are properly used they look like those of some pretty bell Heath. I have seen them used in hand and button-hole bouquets with good effect. The button-hole bouquet was composed of a *Maréchal Niel* Rose bud, blue Forget-me-not, the *Arbutus* bells, and Maiden-hair Fern. The berry, also, when of a good colour, looks bright and effective amongst flowers in stands.

A. HASSARD.

Upper Norwood.

Bridal Wreaths.—Wedding garlands or wreaths are of remote antiquity; they were used among the Romans. Vaurhan (1606) states, that "when the marriage day was come, the bride was bound

to have a chaplet of flowers or hearbes upon her head." Garlands at weddings were used also by the Jews. Wreaths of this kind were used among the Anglo-Saxons. At the termination of the marriage ceremony in the church, the bride and bridegroom both were crowned with wreaths of flowers, which were kept in the church for that purpose. Chaplets of flowers used in the eastern church on this occasion are said to have been blessed. At a later period, sprigs of Myrtle and ears of Corn were sometimes used. Chancer, in his "Clerk of Oxenforde's Prologue," introduces Grislyd, a "verray faithful mayde," dressed out for her wedding; the wreath or "coroun" is mentioned:—

Hir heeres han they kempt, that lay untressed
Ful rudely, and with hire fynnes smale
A coron on hir heed they hani-dressed,
And set hir ful of nowches gret and smale.

In Henry VIII.'s reign the bride wore a wreath of Corn-ears; some times of flowers. Nichols, in his "Churchwardens' Accounts of St-Margaret's, Westminster," gives the following entry under date 1540—"Paid to Alice Lewis, a goldsmith's wife of London, for a serclett to marry maydens in, the 26th day of September, £3 10s." Field, in his "Amends for Ladies," 1639, mentions garlands being placed "upon the heads of the maid and widow that are to be married." Dallaway writes of the Greek Church, that "marriage is by them (of this church) called the matrimonial coronation, from the crowns of garlands with which the parties are decorated, and which they solemnly dissolve on the eighth day following."—W. WINTERS.

Winter-Blooming Carnations.—In country places, where sportsmen find plenty to do, as is the case here, at this season of the year the house is sure to be filled with guests; consequently, an enormous quantity of flowers is required, and must be supplied. Plants and cut flowers must be had for the rooms, the dinner-table must be provided for, and bouquets for button-holes must be abundant. For the latter purpose nothing surpasses the Carnations, of which there are now several free winter-flowering varieties that everyone who wants flowers at this season ought to grow. Among these, I consider the following the best for the winter months, viz.: Monsieur Baldwin, Lady Frances, Garibaldi, Vulcan, Van Houtte, The Bride, Napoleon III., Empress Eugénie, and Miss Jolliffe, the last is the best of all, and one which has been honoured by a first-class certificate at South Kensington. Since I first began growing this variety I have kept yearly increasing my stock of it until now I grow it by the hundred. It is such a profuse flowerer that one may cut an immense quantity of blooms from it daily, flowering, as it does, as freely in pots as the old dark Clove does in the open border. The raiser of this useful variety was Mr. Keen, gardener at Campsey Ash, Wickham Market. To be successful in having a plentiful supply of flowers through the winter, I find it best to get the cuttings rooted in good time; therefore I generally put in a good batch of them early in March, in a gentle bottom-heat; the plan I adopt is to place a couple of hand-lights on a bed filled with leaves in our Rose house where the Roses are plunged, and then put in the hand-lights about 4 inches of sandy soil, which is made quite firm, and the Carnation cuttings inserted. A good watering is then given and no further trouble is required until they begin to root, when air must be admitted by degrees. I have never found this plan fail; the night temperature of the house is about 50°. I use 32 and 24-sized pots for flowering them; if larger pots are employed the plants do not flower so freely.—WM. ALLAN (gardener to Lord Suffield), Ganton Park, Norwich.

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

Equisetums for House Decoration.—While "W. M." (see p. 393), very justly recommends these for outdoor decoration, allow me to observe that when grown in small pots, they form striking ornaments in apartments, or on the dinner-table. For such purposes three stems in one pot are quite sufficient, and the pots in which they are grown should be plunged either in a cold frame or under the shelter of a fence or wall.—G.

La Belle Carnation.—I have a plant of this which did not bloom until the other day, and now it has nine flower-buds on it. I have only a window to grow it in; what, therefore, shall I do with it in order that the blooms may open rightly?—FANNY. [La Belle makes an excellent winter-blooming window plant, which needs no peculiar treatment beyond a place in a window with a south aspect, a stake or two to train the shoots around, and a moderate supply of water. Do not, however, keep the plants in a room where there is much fireheat or gaslight.]

A Wedding Bell of Flowers.—From a New York paper we learn that the wedding or bridal bell, which is now considered almost as indispensable as the ceremony, usually occupies a place in front of the pier-glass, and has floral balls, in proportion to its size, hung on either side of it. The frame work of the bell is of wire, and it is made up of, if in season, Camellias, Tuberoses, and Carnations, all of which must be pure white. The balls are made of the same flowers, and have on them a monogram or design in red, blue, or green, as the fancy may suggest.

THE FRUIT GARDEN.

BRANCH PROPAGATION OF APPLE TREES.

(AFTER MANAGEMENT.)

To ensure success I would urge the advisability of observing and carrying out the following suggestions. Good care must be taken of the branch cuttings during the winter; their succulent roots, which are necessarily very tender, must be protected from the inclemency and vicissitudes of the weather; damp, also, must be guarded against, than which there is nothing, I think, more detrimental to the well-being of young roots. To effect this is very easy. At a distance of 12 to 15 inches all round from each stem, the soil might be forked out so as to leave that which surrounds the bole of a roundish form. Then, over this hillock, if such it might be called, and around the bole, a few forks of manure might be placed with great advantage. These hillocks are very effective in warding off the heavy rains, which otherwise would lie stagnant around the roots, especially when the soil is heavy and retentive. Stable-yard manure which has been for some time mixed up in a hot-bed, I think, is best; it has the double advantage of preserving, and at the same time nourishing the roots. They require no nourishment, of course, during the winter, as then they are at rest; but it is hoarded up for the coming season, when it will be in a very fit state to supply the heavy demand likely to be then made upon it. This mulching will answer as a thatching, as it were, securing the tender roots from the drenching rain and piercing frosts, which would, otherwise, no doubt, in many cases prove fatal. They will be nursed on in an equable temperature, which is, assuredly, one great advantage. They will need no further care until the spring, when the hillocks should be levelled and the manure incorporated with the surrounding soil. Care should be taken, of course, not to disturb or uncover the young roots. In order to give the whole an air of tidiness, the young trees might have any dressing requisite in the way of pruning, &c., then the surface should be neatly forked over, and, if desirable, might be cropped with low-growing vegetables for the first two or three years. In suggesting the introduction of vegetables among the trees, of course, it is assumed that the latter are first planted at the distances intended to be occupied by them permanently. I may observe that I have noticed the fibrous roots of the branch cuttings to be very succulent and brittle, consequently they would, no doubt, sustain much injury in being transplanted, at least for the first two or three years. I may remark that this mode of branch propagation is likely to be a boon to the amateur, whose garden accommodation is limited. Trees thus raised are not likely to require the extra trouble of root-pruning and re-planting, in order to induce fertility; it is reasonable to premise they will never make over-luxuriant tap-roots, which enter the sub-soil, and thus very frequently occasion the non-productiveness of fruit trees. On the other hand, they are most likely to be always prolific, as the fibrous roots they emit so near the surface, are exactly the essential provisions towards that end. Another recommendation which those trees are likely to possess is the quality of being best suited for dwarfs, which come into bearing directly they are established, and are, therefore, of all others, best adapted to form the subjects of a miniature fruit garden.

NOTE.—The above is by Mr. J. B. Barry.

MICHAEL BARRY.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

What is the Best Colour for Fruit Walls?—Wall fruit trees grow best against a light-coloured wall, and a white wall is the best. It is not necessary to have the wall painted white, but it should be kept as light as possible. The best colour for the wall is white, and the best colour for the fruit is red. The best colour for the fruit is red, and the best colour for the wall is white. The best colour for the fruit is red, and the best colour for the wall is white. The best colour for the fruit is red, and the best colour for the wall is white.

Grapes in a Stoke-hole.—At Stoke-hole, in the garden of a nobleman, there is a stoke-hole in which a large number of grapes are raised. The grapes are raised in a stoke-hole, and the stoke-hole is a very good place for raising grapes. The grapes are raised in a stoke-hole, and the stoke-hole is a very good place for raising grapes. The grapes are raised in a stoke-hole, and the stoke-hole is a very good place for raising grapes.

Apples in Utah.—At Salt Lake, Utah, there is a very good place for raising apples. The apples are raised in a garden, and the garden is a very good place for raising apples. The apples are raised in a garden, and the garden is a very good place for raising apples. The apples are raised in a garden, and the garden is a very good place for raising apples.

GARDEN DESIGN.

THE BOBOLI GARDENS AT FLORENCE.

FLORENCE was a fair city of marble palaces and magnificent gardens when London was still half built of wood and plaster. One of the old descriptions of the antiquities and beauties of Florence, published in 1771, contains a list of no less than sixteen remarkable gardens, including those known as the Giardini Boboli. These are the best known to the ordinary tourist, and are, indeed, the most worthy of being carefully studied by the horticulturist on account of their extent, the beauty of their site, and the profusion of their architectural and statuesque embellishments. The Boboli Gardens, at the rear of the Palazzo Pitti, owe their chief enrichments, and many of the finer features of the general laying out, to the taste for splendour indulged in by the Medici, more especially Cosmo I.; but the palace was originally built and the gardens planned by Lucca Pitti, after the designs of Brunelleschi, the most celebrated architect of the day. The Florentine, Magnifico Pitti, was one of those merchant princes who rivalled even the Medici in wealth and influence; but political intrigues of an unworthy character led to his downfall, and the noble palace and gardens which he had caused to be constructed were eventually sold by his great grandson to Eleonora of Portugal, the wife of Cosmo I., who had been invested by the Pope with the title of Grand Duke. When the palace and gardens thus became the property of the newly-created Grand Duke of Florence, the artists, Tribolo and Buontalenti, were called in to superadd every embellishment that the genius of the age could suggest; and in 1570, a century before the gardens of Versailles were dreamed of—indeed, when the ground on which they stand was a vast barren swamp—grottoes, fountains, marble vases of gigantic size, and a number of statues, both ancient and modern (that is to say, of the Renaissance period), were made to minister to the beauty and interest of the grand-ducal gardens.

The embellishments of the Boboli gardens may be objected to by a certain class of modern critics, on what they assume to be the true principles of taste in decorative horticulture. Judged by the standard thus set up, the artificial ponds of symmetrical forms, surrounded by moulded copings of stone or marble may seem less attractive, and correct in principle, than small lakelets of irregular form, terminating in some parts with a beach of sand or gravel, and in others with green turf meeting and blending with the water. It is true that such features in purely natural scenery possess a charm that never fails to please. But whether in a stately garden, immediately adjoining a palace, in which all is art, they may or may not be too harsh and too sudden a contrast, is one of those perennial questions in the science of decorative horticulture that will continue to form a natural and legitimate ground of disputation among horticulturists. But the supporters of either side of this interesting question can meet on the common ground of genuine admiration, free from any kind of hypercritical influence, when they have the good fortune to meet with such a scene as that represented in the accompanying engraving. The finely composed group of sculpture, supported by the tazza of the fountain, undisturbed as it is by the proximity of other statuary, and backed by large masses of luxuriant verdure, has a grand and striking effect which produces an immediate impression of admiration. The great clipped walls of verdure, too, even if objectionable according to the theories of the highest school of horticultural art, are confessedly suitable to the Italian climate; which, during the summer months, renders the deeply shaded alleys, which these shaven trees are made to form, most desirable. The Laurels, evergreen Oaks, and, in short, all the plants and trees of these celebrated gardens thrive very luxuriantly; especially the Cypresses, of which there are both groups and avenues. Flower-beds are introduced with good effect in the more open parts, and they are more carefully tended of late years than formerly, the result of such improved treatment being highly satisfactory. From the higher points of these beautiful gardens magnificent views are commanded of the greater portion of Florence; The Duomo, Giotto's celebrated belfry, the grand old tower of the Palazzo vecchio, the course of the Arno, with its picturesque bridges, and portions of the city



VIEW IN THE BOBOLI GARDENS, FLORENCE.

walls with their great square towers and lesser turrets forming the most salient features.

It must not be imagined that the grand fountain, and its surroundings, represented in our illustration, form the only highly decorative feature in the Boboli Gardens. There are terraces lined with a profusion of statuary, both ancient and modern; among which the celebrated group of "Paris and Helen" holds the highest place, while the "Venus," by John of Bologna, and the "Apollo," by Bandinelli, are well-known masterpieces of Italian Art. There are also a number of noble vases, some of great size, cut from single blocks of Carrara marble, and other decorations, both sculptural and architectural, of a highly decorative kind. The grotto, constructed by Buontalenti, is chiefly notable on account of the grandiose, though unfinished, statues by Michael Angelo, which were originally intended for the tomb of Pope Julius II.; while the colossal statue of "Abundance," with its surrounding adjuncts, is also one of the grand features of the gardens. Among the other gardens of Florence, that of the so-called Castle of the Medici, in the suburbs, is the largest. The castle, or rather country palace, was built by Cosmo I., at the foot of Monte Morello. In its front is an extensive lawn, or prato (meadow), as the Italians term it. Farther on are two small lakes, or rather reservoirs, separated by a bridge leading to a noble avenue of Cypresses. The façade of the Loggia is enriched with mural sculptures in high relief, by Panormo and other eminent sculptors of the time, representing various episodes in Italian history; and in the rear of the palace are spacious and magnificent gardens embellished with statuary, fountains, and rich architectural dressings, scarcely inferior to those of Boboli.

H. N. H.

IRON IN PLANTS.

AMONG the constituent elements of animal life, physiologists tell us that iron is one so necessary, that if suppressed in the daily food the organism will sink and the animal inevitably die. Boussingault has found, by analysis, in 100 grammes (about 3½ ounces) of the blood of man, 54 milligrammes of iron, in that of the ox 55, of the hog 59, goose 37, turkey 33, hen 37, duck 34, frog 42; in the flesh of the ox 5, calf 3, haddock 8, cow's milk 2, eggs 6; in white bread 5, Indian meal 4, Beans 7, Lentils 8, Oats 13, Potatoes 2, green Cabbage 4, and hay 8; in Beaujolais wine 10, beer 4, Alsace white wine 8; in the water of the river Marne 1, Dhuis 1, and Seine 4-10ths. These figures are sufficient to show the large quantities of iron absorbed by man, also that the greater portion is derived by him from animal food, and almost the whole from mixed animal and vegetable food, and that the inferior animals, the ox, the sheep, and the horse, derive theirs from the vegetable world, the small quantities contained in their drinking water forming but an insignificant part of the whole. The same author tells us that animals in the growing state, children, lambs, colts, &c., retain in their systems in a fixed condition the whole of the iron they take in, just as they do in the case of nitrogen, and that later, when fully developed, the whole of the iron taken in, merely passes through the organism. By this it would appear that the Grass in a pasture receives back daily, so to say, at its roots, the whole of the iron taken from it by the ox and sheep in the blades cropped by them. This apparently insignificant fact may, nevertheless, be of much importance; for, to judge from the quantities of iron existing in all plants, they must necessarily have as imperative a need of it as animals; but, as they can in many cases receive it but slowly in the water they imbibe, because the soil through which the water has flowed may have contained but very little iron in a soluble state, they would, as in the case of Grasses in a pasture constantly grazed, end by turning yellow and chlorotic were all the iron taken from them by cattle or sheep never returned. From what has just been stated, one might infer that such would eventually be the case were the pasture constantly grazed exclusively by calves, lambs, milch cows, and ewes; the iron in this case found in the milk, as well as that absorbed directly by the young, never being returned. Many other elementary bodies absorbed by animals under the form of oxides or of salts—such as aluminium, silicium, calcium, potassium, sodium, sulphur, phosphorus, &c.—are probably also chiefly derived from the vegetable world, and a certain quantity of them is never returned until after death. The interchange, between living plants and animals, of those gases which, combined in different proportions, form such very different substances—as starch, sugar, alcohol, and the various acids which give the peculiar flavour to each fruit, &c.—would properly come under another heading.

Versailles.

FRED. PALMER.

THE PROPAGATOR.

RECENT OBSERVATIONS ON THE FERTILISATION OF PLANTS.

By A. W. BENNETT, M.A., in the "Popular Science Review."

It is proposed in the following article to give an account of some of the most recent observations on the subject of the contrivances by which the fertilisation of flowers is effected; a subject the details of which are so numerous and varied that the field of observation open, not only to the scientific botanist, but even to the ordinary observer, seems almost boundless. So much has now been written on this subject that everyone who has followed it to any extent is aware that the greater number of flowers are cross-fertilised—though to this rule there are exceptions to which we shall allude presently—and that the mode in which this cross-fertilisation is usually effected is by the agency of insects. There are, however, a considerable number of flowers which are fertilised without the assistance of insects by means of the wind; and as these present, as a class, peculiar features of their own, we may spend a little time in the first place in considering them.

The Agency of the Wind.

A familiar example of flowers fertilised in this way is furnished by the common Hazel, which flowers from January till the early part of March, even when the weather is very cold, and when there are scarcely any insects on the wing. The flowers of the Hazel are of two kinds, male and female. The male flowers constitute the familiar catkins, which drop off and disappear before the leaves make their appearance. The catkins are generally in bunches of from two to four, every catkin containing on an average perhaps from 100 to 120 flowers. Each of these male flowers consists of a simple scale-like bract enclosing from eight to twelve anthers, each of which discharges, when ripe, a cloud of innumerable pollen-grains; so that the number of these grains in any single catkin must be prodigious. The female flowers are found on the same branches as the catkins, and are also in clusters of from two to six or eight (the future nuts), and are of equally simple structure with the male flowers, being formed of a single pistil enclosed in bracts, the ovary surmounted by from three to five stigmas, the bright crimson threads by which these female flowers are recognised. If one of these crimson threads is placed under an ordinary pocket lens, it will generally be found to have on its surface several apparently minute particles of dust, which, on further examination, are found to be pollen-grains which have been blown from the male flowers. Each individual pollen-grain has the power of emitting a "pollen-tube," which penetrates the stigma, reaches the ovary, and by the fertilisation of the ovule induces the formation of the embryo, and thus the development of the ovule into the fertile nut. Since the only means by which the pollen can be conveyed from the male to the female flower is the agency of the wind, and it is only quite by chance that any of the grains can reach their destination, the reason is obvious of the enormous amount of pollen with which the catkins of the Hazel are furnished. In some plants, the fertilisation of which is effected in the same manner, the quantity of pollen is still greater, and this is especially the case in the Coniferæ or Fir tribe. If a Yew tree is struck with a stick or agitated by the wind at the time when the pollen is being discharged, it will rise in the form of dense smoke, giving the impression of a burning bush; and American travellers have described how the water of some of their lakes near the shore is covered at certain seasons by a thick stratum of a sulphur-like substance, the pollen blown from the neighbouring Pine woods. Whether the female flowers of the Hazel are fertilised from the catkins on the same or on a different bush is a point still in dispute. Another instance in which there is little doubt that fertilisation is accomplished by the wind, though botanists are not quite unanimous on this point, is that of our common cereal crops, and especially of Wheat. Important in the highest degree from a mere mercantile point of view as is any question connected with the production of our corn crops, it is only very recently that any reliable observations have been made on the mode in which the flowers of Wheat are fertilised; but these have led to some very curious results. When a field of Wheat is in flower, that is, in ordinary seasons, in the early part of June, each ear will be found to be furnished with a great number of purplish anthers hanging at the ends of filaments of extraordinary delicacy, or rather of empty anther-sacs from which every grain of pollen has been discharged. These anthers appear, when they have arrived at maturity, to break suddenly out of the opening bud, the filament elongating in a moment to several times its original length, the anther bursting at the same time, when the slowness of its attachment to the filament causes the least breath of wind to sweep the whole of the light dusty pollen out of its case, some of which must necessarily reach the neighbouring

stigmas in the same ear, provided there is not enough wind to blow it completely away. In Rye and Oats this extraordinarily rapid lengthening of the filaments is even more conspicuous than in Wheat. Hence the importance attached by farmers to comparatively calm sunny weather at the critical period when the Corn is in flower. These two examples furnish good illustrations of the structure which prevails in those flowers that are fertilised by the wind. They are generally of very simple structure, and rarely brightly coloured, since bright colours would be of no advantage to them. The quantity of pollen is usually very large, and the structure of the male flowers such that it is dispersed by the wind with the greatest facility, this being brought about by the slender "versatile" filaments of the Wheat and by the lightly-hanging catkins of the Hazel, the Willow, and other early-flowering shrubs, which appear before the leaves, and hence at a period when there is no obstruction to the free dissemination of the pollen. In the majority of flowers, however, the structure of the pollen, or the arrangement relatively to one another of the pistil and stamens, is such that fertilisation could not be effected by the wind alone. Sometimes the pollen-grains themselves are too large and heavy to be thus conveyed, or they are united together by fine threads or even into dense masses; or the position of the stigmatic portion of the pistil is evidently not adapted for the pollen to reach it in this way; and Nature then employs as the agent in fertilisation the services of insects or of other small animals. This opportunity is afforded by the visits of insects to the flowers in search of the honey or nectar which forms an important portion of the food of many classes.

Agency of Insects.

The attraction to the flowers which serve insects for food is two-fold, scent and colour; in other words, those properties which chiefly render flowers attractive to our own senses. The honey or other sweet juice is generally stored in small glands or receptacles, which together form the "nectary," the position of which is extremely variable—the deep pits at the base of the corolla in the Crown-Imperial, the small scroll-like petals of the Hellebore, the bottom of the spur in Orchises and the Larkspur, the prolongations of two of the stamens which project into the spur of the Violet and Pansy, very frequently minute glands at the base of the stamens or pistil, &c. Nature is always economical of her resources; and accordingly we do not generally find that strong scent and brilliant variegation of colour are bestowed on the same flower. Those which are most prized for the power or delicacy of their scent have, as a rule, flowers either inconspicuous, or, if large and conspicuous, of uniform unvariegated colour; as, for instance, the Mignonette, Daphne, Primrose, sweet Violet, Lily of the Valley, Rose, Evening Primrose, Pink (in its primitive white state), Honey-suckle, Lime Tree, and many others; whilst the most brilliantly-variegated flowers are comparatively or quite scentless, as the Fritillary, Pelargonium, larger and smaller Convolvulus, Tropæolum, Mimulus, Ranunculus, Pansy, &c. In scented flowers the scent proceeds from the nectar itself, and is therefore a sufficient guide for the insects in search of it. One of the largest of scented flowers, the Evening Primrose, blossoming only in the night, is fecundated by night-flying moths, which probably require the large sulphur-yellow flowers, as well as the scent, to guide them from a distance in the dim light. A distinction may also be drawn in general terms between the mode of fertilisation of large conspicuous and of smaller variegated flowers; the agents in the former case being generally large insects, butterflies, moths, beetles, or bees; in the latter very much smaller ones. If a watch is kept on very large flowers, such as the single Hollyhock, single Pæony, "Convolvulus major" of the gardens, the large white wild Convolvulus, Fuchsia, &c., it will be seen that their visitors mostly consist of large beetles, hive or bumble-bees, or butterflies, while the small flowers are overrun with small flies or other minute insects to which the variegation serves as a guide, the streaks or rows of colouring invariably pointing to the nectary or receptacle of honey. American naturalists state that many of the largest and most gorgeous flowers of the Western continent, such as the Bignonias or Trumpet-flowers, are fecundated by humming-birds. A very good illustration of the different contrivances exhibited by two closely-allied plants—one scented and fertilised by bees, the other scentless and variegated, and fertilised by very minute insects—is afforded by the sweet Violet and the Pansy.

If attention is paid to the arrangement and position of the stigmas and stamens at the time when insects are seeking the flowers for the sake of the honey, it will be seen that the anthers are almost always at this time discharging their pollen, and that it is impossible for the insect to find its way to the nectary, or to insert its proboscis into it, without brushing against one or more of the anthers, and carrying away with it a portion of the pollen. Either in its retreat from the flower or in entering the next flower (of the same species) which it visits, it will also almost inevitably strike against the stigma

and leave some of the pollen-grains behind on it, which will then put out their tubes and fertilise the ovules. But, inasmuch as in by far the majority of cases the stigma is not "receptive," or in that papillose and viscid condition in which alone it incites the emission of the pollen-tubes at the same time that the pollen is being discharged from the anthers in the same individual flower, provision is thus made for that "cross-fertilisation" which we have already spoken of as the general rule; and, indeed, in many cases no other mode of fertilisation is possible.

Flower-arrangements for Cross-fertilisation.

Readers of botanical literature are now so familiar with illustrations of the infinite variety and beauty of the contrivances for the cross-fertilisation of flowers by insect agency, that we do not propose to give any more here. The simple arrangement by which the pistil and stamens in the same flower arrive at maturity at different times may be noticed without difficulty by the most careless observer. It is only necessary to gather the common rib-grass (*Plantago lanceolata*) to observe that the feathery stigmas are produced from the still half-closed bud or before the stamens are nearly mature; and the same is the case with the water-side figworts (*Scrophularia nodosa* and *aquatica*). The reverse, however, is far more common, and may be well seen in almost any plant belonging to the natural order Caryophyllaceæ, as, for example, any of the common species of stitch-wort (*Stellaria Holostea* or *graminea*), where the anthers have actually dropped off the filament before the stigmas have acquired their receptive condition. The Hare-bell, or any other species of *Campanula*, wild or cultivated, will illustrate the same phenomenon. A singular circumstance connected with these arrangements is that closely allied species of the same genus exhibit sometimes exactly opposite peculiarities in this respect; and it is even uncertain whether the same species does not vary under different conditions. A very interesting account of the phenomena presented by a number of plants of the Pea tribe belonging to the natural order Leguminosæ, by Mr. T. H. Farrer, will be found in "Nature," vol. vi. We may give a single very good example of this in the two common Mallows. In the large Mallow (*Malva sylvestris*) the stamens are collected together into a bundle completely surrounding and overtopping the pistil. At a latter stage the empty anthers are bent down out of the way of the stigmas, which are even yet not in a receptive condition. Spontaneous self-fertilisation is in this case scarcely possible. In the smaller species (*Malva rotundifolia*) the structure is the same up to a certain point, but the stigmas mature earlier, and when in this condition coil themselves among the anthers, there being still sufficient pollen left in the anthers to ensure the self-fertilisation of the flower. The two species often grow intermixed; both are scentless; insects are, however, abundantly attracted by the large showy flowers of *M. sylvestris*, which are also beautifully streaked, the streaks all pointing towards the nectar-glands, at the base of the tube formed by the filaments. The flowers of *M. rotundifolia* are much smaller and of paler colour and are not streaked, and hence not so attractive to insects. Dr. Müller records thirty-one species of insects, chiefly Hymenoptera, which he detected visiting the former, whilst only four were observed to frequent the latter species. *Dianthus deltoides*, the "Maiden-Pink," is scentless; but each of the five petals is provided with a number of purple spots, which seem to indicate to the butterflies, by which they are chiefly visited, the exact place wherein to insert their proboscis in order to reach the honey-glands. The anther, at this time discharging pollen, is placed immediately over each petal, and the butterfly cannot fail to carry off some of the dust on its head. A second inner row of five stamens, at this period completely concealed within the tube of the corolla, do not mature till later; and it is only after all the anthers have dropped off that the two stigmas, previously coiled round one another, separate and develop the hairs which served for the detention of the pollen. While the various contrivances connected with the arrangements of the male and female organs have been more or less known to botanists for three-quarters of a century, very little attention has been paid, until the publication in the present year of Prof. Müller's book already mentioned, to the corresponding adaptations of the structure of insects for the same purpose. This naturalist—an accomplished entomologist as well as botanist—has made this branch of the subject his special study, and has collected together a large number of interesting and curious facts.

Pollen removed by Insects in two ways.

There are two ways in which insects perform their part in fertilisation—in their search for honey and for pollen. Several instances occur of the mode in which insects, especially those furnished with a long proboscis and belonging to the orders Lepidoptera and Hymenoptera, involuntarily detach some of the pollen while obtaining their food, and carry it away with them to fructify other flowers which they then visit. One of the most interesting examples of this was first

described in detail by Darwin in his work on the Fertilisation of Orchids; and it is extremely easy to observe the manner in which the pollen-masses or "pollinia" of Orchids are carried away on the proboscis of butterflies and moths. The natural order Asclepiadaceæ, to which belong the beautiful waxen-flowered Hoya and the singular foetid Stapelia, has the pollen arranged, in the same manner as in Orchids, in pollen-masses which are similarly fixed in pairs to a viscid base, the whole apparatus being easily detached on to any insect which visits the flower.

The second mode in which insects assist in the fertilisation of flowers is by the voluntary deportation of pollen; and this is chiefly effected by Hymenoptera belonging to the class Apidæ, which includes the hive and bumble-bees that build nests in which they store up large quantities of food for their young while in the larva state. This "bee-bread," as it is termed, with which the thighs of homeward-bound bees are seen to be heavily laden, consists almost entirely of innumerable pollen-grains robbed from the flowers, which the little depredators may be seen to despoil in a very scientific manner. Though the greater quantity of this pollen is carried home, small quantities of it are unintentionally left behind here and there on the stigmas of the flowers, quite sufficient to ensure the fertilisation of the ova. Prof. Müller arranges the different genera of Apidæ into a series according to their adaptation for this deportation of pollen, from the extent to which their thighs, shins, and feet are clothed with hairs.

Besides these, there is a third purpose for which insects remove the pollen of flowers, which is less known, and the object of which in the vegetable economy is not so evident: viz., by actually eating it. This has chiefly been observed in the case of flies or Diptera belonging to the class Syrphidæ, the movements of which in summer and autumn, in hovering over flowers and then suddenly darting upon them, are so remarkable. Many entomologists doubt whether it is possible for flies, which have no mandibles, and whose only food-obtaining organ is a proboscis adapted for suction, to masticate so comparatively hard a substance as pollen-grains. This need not, however, present a difficulty to anyone who has smarted under the irritating attacks of flies and midges during rainy weather in mountainous countries. We have ourselves dissected the bodies of flies belonging to this family, and found their stomachs in many cases perfectly loaded with pollen-grains. Prof. Müller takes this view very decidedly, and gives some admirable drawings to show the manner in which the extreme tip of the proboscis is furnished with a number of cross-bars, by means of which, as he has himself observed, these insects are able even to tear asunder the fine threads by which the grains of pollen are frequently attached to one another, as in the Evening Primrose. It is often a matter of surprise to the cultivators of flowers that many species which flower luxuriantly in our gardens never produce fruit or seed, though all the separate organs of the flower appear to be perfectly developed. This is the case, for instance, with the large white *Convolvulus* grown frequently against the walls of houses, and with the yellow *Jessamine* which flowers in the winter, and to a less extent with the *Calycanthus* or Allspice tree. The reason of this is no doubt generally the absence of those insects which serve as their fertilisers in their native country, our native species either not being attracted by their foreign nectar, or not possessing the mechanical appliances necessary to obtain it, and hence not visiting the flowers. We mentioned at the outset that, though the large majority of flowers are cross-fertilised, yet there are exceptions to the rule. Darwin has described the peculiar contrivance by which self-fertilisation is effected in the singular Bee-orchis (*Ophrys apifera*) of our chalk hills, alone among our native Orchids. There are not a few flowers which never or scarcely ever completely open their petals so as to allow either the entrance of an insect or the escape of the pollen. An instance of this is furnished by the pretty little bog-plant the Sundew (*Drosera rotundifolia*).

"Cleistogamous" or self-fertilising Flowers.

The most singular, however, of these special contrivances for self-fertilisation are the peculiarly-shaped "cleistogamous" flowers, as they have been termed—which occur in many plants belonging to widely-separated natural orders, either intermixed with the ordinary conspicuous flowers or appearing at a different time of the year—with respect to which very little has been written in English botanical works. Among the natural orders in which these flowers have been found are Violaceæ, Cistaceæ, Oxalidæ, Balsaminæ, Polygalaceæ, Caryophyllaceæ, Malpighiaceæ, Leguminosæ, Campanulaceæ, Convolvulaceæ, Acanthaceæ, Labiatæ, and one order of Endogens, Comelynacæ. The two species of *Impatiens* or Touch-me-not, which grow wild in this country—I. *Noli-me-tangere*, native in Westmoreland and some other rocky and woody parts, and I. *fulva*, a North American plant fully naturalised by the banks of the Wey and other parts of Surrey, as well as the smaller I. *parviflora*, now also rapidly

becoming completely naturalised in the neighbourhood of London—have closed, imperfect, self-fertilised flowers intermixed with the showy yellow ones. They are far more numerous than the conspicuous flowers, much smaller, and easily recognised even in the bud. The calyx is quite regular, not presenting the "spur" of the open flowers, always remains perfectly closed, and is pushed off at the extremity of the seed-vessel in the form of a little brown cap. The petals are entirely absent. The stamens are of an altogether different shape to those of the larger flowers, and contain but a very small quantity of pollen, which, however, is amply sufficient for the fertilisation of the ovules, the full number of seeds appearing to be always produced. The most easily-observed instances are, however, in the case of our common wild Violets, the Sweet Violet (*Viola odorata*), or the various forms of the Dog Violet (*V. canina*). The existence of these flowers in *Viola* was known as long ago as the time of Linnaeus, who, in his "Prælectiones Botanicae," says that the flowers of *Viola mirabilis* produced in the spring are often barren; while the later ones, which have no corolla, are fertile. Von Mohl has seen the pollen escape from the anthers on to the stigmas, and give out abundance of pollen-tubes. Monnier says that the ordinary spring flowers of *Viola hirta* and *odorata* never produce seed; but this statement is disputed by others. The "cleistogamous" flowers of the Violet appear long after those that are so familiar in the spring, and may be found in abundance about July and August, very small, but still not difficult to make out. On opening them there is no trace of petals; there are five stamens, with long filaments and very small anthers, offering scarcely any resemblance to those of the open flowers, which have very large anthers and no filaments. The pollen, again, very small in quantity, is contained in two almost transparent bags at the base of the anther, and is discharged directly on to the stigma. The pistil consists of a conical ovary, and a very large stigma curved completely over in a semi-circle so as to bring the papillose receptive surface into a horizontal position in which it will most readily receive the pollen. A most instructive contrast is afforded between the arrangements of the reproductive organs in these two kinds of flowers on the same plant. In the showy spring flowers the stigma projects horizontally in the form of a beak above and quite clear of the stamens, the arrangement of which is such that it is scarcely possible for any of the pollen to reach the stigma without the intervention of insect agency. In the closed summer flowers it will be seen that the arrangements have evidently an exactly opposite purpose. They produce abundance of seed. Another section of the genus *Viola*, of which the wild Pansy (*Viola tricolor*) may be taken as a type, produces no cleistogamous flowers; and the contrivances for the fertilisation are, as has already been mentioned, quite different from those in the true Violet.

In two Indian species of *Campanula*, the closed flowers are described by Professor Oliver as being altogether different in shape to the conspicuous ones. They are covered by a completely closed membrane, the rudiment of the corolla; the stamens are extended horizontally, and the anthers are quite connate, and together adnate to the stigma. As the flowers have only at present been observed in dried herbarium specimens, the mode in which the pollen-grains reach the stigma is still uncertain. In *Juncus bufonius* it is said that the pollen-tubes are emitted while still within the anther, the wall of which they pierce. In the Wood-sorrel, *Oxalis acetosella*, the closed flowers, which appear towards the end of the summer, resemble much more closely the well-known spring flowers, which are in this case certainly fertile. In accordance with the ordinary practice of economy by nature, the amount of pollen in the "cleistogamous" is generally very much less than in the open flowers, since it has very little chance of being wasted. In the small flowers of *Malpighiaceæ*, Jussieu states that there are only a very few grains of pollen; in those of the Wood-sorrel, where twenty to thirty ovules have to be fertilised, Von Mohl gives the quantity as from one to two dozen grains in each anther-cell; in *Impatiens* it is considerably larger, while in *Viola* the number of grains is very small. More detailed examination of these closed flowers in different plants will doubtless yield interesting and important results.

The Wood of the Osage Orange.—In a recent visit to Texas a traveller saw numbers of the Bois d'Arc or Osage Orange trees in the river valleys, and heard marvellous stories of the endurance of the wood in situations where it was much exposed to alternate moisture and drought. It was much used by the Indians for bows, and the early French *voyageurs* gave it the name of Bois d'Arc, or bow-wood, a name often corrupted into "Bodock." The tree grows sometimes to a diameter of two or three feet, and is sawn into timber for wagons. It is close-grained, and the tire once set upon the wheels never becomes loose until it is worn out. This is a great advantage in dry climates.

GARDEN DESTROYERS.

YELLOW-TAILED MOTH.

(BOMBYX (LIPARIS) AURIFLUA.)

THIS species (fig. 1) is very like the brown-tail (*Liparis chrysorrhea*), of which we have already spoken, but is of a purer white, and has its tail covered with hairs of a fine yellow instead of a reddish or greyish-brown. It lays its eggs like it (which, however, are yellowish instead of rose-coloured), and covers them with hairs from its tail in a like manner. Like it, too, it is, generally speaking, autumn (September) before the larvæ are hatched, which also manufacture a silken tent for



The Yellow-tailed Moth.

themselves, under which they pass the winter, having previously undergone their first month there. The larva is represented in fig. 2. It is blackish-brown, with dark hairs. It has on its back, from the first segment backwards, a double row of pure white mealy spots. Between these two rows of white spots there are two lines of bright red, dilated cross-wise on the fourth segment, which, as well as the following, is a little raised into a fleshy hump. On the ninth and tenth



Caterpillar of the Yellow-tailed Moth.

segments there are also between the two red lines two very small red spots, which are slightly retractile. The tubercles of the side are red or ferruginous, as if linked to each other by a more or less decided lateral red line. The caterpillar undergoes its metamorphosis in the end of June, and remains for about three weeks in the chrysalis state. This species is neither so common nor so injurious as the *Liparis chrysorrhea*. It has a great predilection for the Rose and Thorn, and also feeds on most of the other Rosaceæ.

A. M.

THE WINTER MOTH.

(CHEIMATOBIA BRUMATA.)

BUSY on the wing, flitting here and there throughout our gardens and orchards, quite regardless of the cold and stormy weather which they must encounter throughout November and December, are the male Winter Moths, which may be seen in numbers during this month and the next. The female being one of those curious moths which only have rudimentary or scarcely any wings, and which looks like a deformed fly, is

quite incapable of flying. She, having left the chrysalis state in which she has passed the last six or seven months, secure beneath the surface of the earth, now comes forth and ascends the trunk of the tree beneath which she has reposed so long. Though these insects infest nearly all trees, devouring those of the forest as well as the garden, they do by far greater damage to the latter. I have seen Apple trees almost entirely defoliated by the larvæ of this mischievous moth. The female having ascended the tree, lays her eggs there in great numbers. These eggs hatch at the beginning of spring, and the youthful larvæ commence to feed on the buds, and may be found plentifully from April to June, living in concealment between doubled leaves. The caterpillar is most variable in appearance, being of different shades and colours, sometimes pale green or yellowish, or nearly brown; but, generally, the caterpillar is green; the stripes also vary in colour and intensity; the dorsal line is dark green, sub-dorsal and spiracular lines white or yellowish; between the sub-dorsal and spiracular lines a series of lateral streaks of the same colour; segmental divisions yellowish, and spiracles black. The most approved method of destroying these insects, is, to paint the trunk of the tree at this time of year with tar or some sticky mixture into which the female is entrapped.

W.

BIRDS VERSUS INSECTS.

THE prevalence of insects, of all kinds and shapes, in and about London, is a subject worthy of our best consideration. In the gardens, the parks, and all the open places in the vicinity of the Metropolis, they abound to a marvellous extent. Such a contrast prevails between the London gardens and those of the country, in this respect, that the difference presents itself to us in the most forcible manner. Let us visit those gardens which are situated in distant counties, far beyond the reach of London bird-catchers. Here trees, shrubs, bushes, and flowers flourish unharmed. Why is this? Have the birds nothing to do with it? The disappointed entomologist, searching amongst the fruit trees and culinary vegetables for rare specimens of the larvæ and eggs of moths and butterflies, finds that the titmouse (*Parus major*, *P. ater*, and *P. cœruleus*) and the wren (*Motacilla troglodytes*) have been before him; and that the pretty redstart (*M. Phœnicurus*), the homely robin (*M. rubecula*), and last, but not least, the sparrow (*Passer domesticus*), who does so much damage amongst insects, have left him but a poor supply wherewith to furnish his collecting box; for in these country gardens and rural lanes and fields also, where birds are still allowed to roam unharmed, and where the Wild Birds' Protection Act is as yet hardly needed, the rustic population of these favoured spots is contented with an occasional goldfinch or stray linnæ to enliven the cottage home, and the insect community is comparatively scarce. Turn then to the neighbourhood of London. There all kinds of insects appear to find a quiet and safe retreat. There are collected, without end, not only those of the larger moths and butterflies, such as the dot (*Mamestra persicariæ*), the buff-ermine (*Spilosoma lubricipeda*), the buff-tip (*Pygæa bucephala*), just full fed and going to earth, the large and small garden white (*Pieris brassicæ* and *P. rapæ*), but the caterpillars of the Tortricinæ and smaller moths and sawflies innumerable. Spiders, too, of various forms and sizes are most numerous, entwining their silken threads from tree to tree, spinning their webs from plant to plant, so that as you move along a path, or pass between an Apple and a Rhododendron, you find yourself entwined in a web which links the two trees together, and all this because the birds are absent.

OWEN WILSON.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Potato Bug.—We hear that an Indiana man has outwitted the Potato bug—that dreaded pest of the American cultivator. He sowed grains of Indian Corn in the Potato drills, and as the Corn came up before the Potatoes, the "bugs," waiting for the first appearance of the latter, rushed off to pastures new, under the impression that they were in a Corn-field, and thus the Potatoes escaped.

Destroying Bees.—C. V. Riley, State Entomologist of Missouri, says that bees, when they become excessively troublesome, may be destroyed by planting Milk Weed (*Asclepias*), the flowers of which have pollen masses, appearing like wax, which adhere firmly to the hair and claws of the bees, encumbering their motions, so that many drop to the ground and die. He has known an apiary reduced one-half in numbers in this way.

THE ARBORETUM.

HOW TO DISPOSE OF HOME-GROWN TIMBER.*

IN considering this subject, I will state the various methods of disposing of timber with which I am acquainted, and give my opinion on their respective merits, as follows:—1. Selling standing timber; 2. Selling fallen timber by auction; 3. Do. by tender; 4. Do. privately; 5. Do. in a manufactured state. The selling of growing timber, which is very general throughout the country, is a common mode of disposal, but is, I believe, more common in England than in Scotland. Its advantage may be described as follows:—1. If the bidding at the sale does not reach the reserved valuation, the timber can be left standing, and if in a healthy condition will improve in value. 2. The sale can be managed at much less expense than if the timber is cut down previous to being sold. When sold in this way, the common plan is to go through and number each tree, and put a valuation on it,—all the propwood or small poles being simply marked and counted, and an average taken of what they contain. A reserve price is then made out; and if the intending purchasers do not bid up to that figure, there is no sale till some future time. After the timber is sold, the purchaser sends men into the wood and has the timber cut down and taken off the ground at his own expense, the conditions of sale generally binding him to have it removed before a certain date, otherwise it becomes forfeited to the vendor. Some "conditions" are extremely binding in this respect, others are quite the reverse, and very much to be condemned. For instance, a sale came under my notice a few weeks ago (in Dec. 1871), the time fixed for having the timber off being March 1873. A quantity of the wood sold was fast-growing Ash, so that besides the damage done to the trees that were to remain, the timber merchant, by letting the timber stand till October 1872, will have several hundred feet of wood more than he had at the time of the sale. I will now state some of the disadvantages of selling timber in this way. When a sale takes place, it is generally in lots valued at from two or three hundred up to several thousand pounds. The higher the value of the lot, the fewer there are who can purchase it, and consequently there is less competition; and it sometimes occurs that there is an understanding among the bidders at a sale which one is purchaser, the others having what they want out of the lot at a certain price; but it may be answered, if the timber brings the reserved valuation, the proprietor will have got its value. To this I would reply, that even the most practical valuer cannot tell within a foot or two what a tree contains; and in large trees the difference is, of course, greater, and valuers, as a rule, always try rather to keep below than above the exact measure. If we suppose a fall of timber to be taken down containing 4,000 trees, and each of the trees to be 1 foot over the measure calculated to be in it—which would be very near the mark—we have at once 4,000 feet of timber, which, valued at 9d. per foot, gives £150. I consider that to be a very near case. In fact timber-merchants consider their servants have not valued timber properly if a tree when fallen does not yield several feet above what they calculated to be in it. There is a fall of timber being taken down in this neighbourhood at present, where many of the trees are turning out as much as from 12 to 16 feet above the estimated contents. These are all clean grown Beech, worth 1s. per foot. Another great disadvantage of this method is, the letting strange men into the plantation to cut down the timber. I know it is argued by some that this is no disadvantage, as it can be arranged that the proprietor's men shall cut down the timber; but if this is to be done at the proprietor's expense, it should be done previous to being sold; and if at the timber merchant's expense, the workmen become his servants for the time being.

The common practice with timber-merchants is to engage men to do the work at so much per 100 feet, and the greatest carelessness is the result. I have always found that men working in this way break other trees to any extent, before they would take the trouble of lopping the one they are engaged in cutting down. Then there is the drawing out of

trees with horses. In this operation much damage is often done by carelessness, the men who are doing the work having no interest in being careful. The result is, that many trees get barked to an extent from which they never recover. I have heard gentlemen who have had large experience in the management of estates, argue greatly in favour of this method of selling timber; but I have never found any practical forester, or wood manager, declare that it was the most satisfactory way of doing the work committed to their charge. The reason it finds favour with estate agents and factors may generally be traced to the cheapness whereby sales conducted in this way can be effected; an argument which should be sufficiently answered by taking into consideration the fact that timber merchants have generally to pay a higher rate of wages for felling, &c., than landed proprietors are able to do it for; and it is very clear that the expense of such work must be made up in some way. There are cases where this may be the best way of disposing of a lot of timber. For instance, if it is growing on an outlying estate, where there is not a regular staff of workmen kept, or where there is a difficulty in obtaining the necessary funds for carrying out the work. When it is thought best to sell standing timber, I should recommend selling by tender, for reasons mentioned under that heading.

Selling Felled Timber by Auction.

This is a method of disposing of timber which is pretty general in most parts of Scotland, and occasionally in England; and I consider it by far the most profitable way of disposing of timber. No doubt it is more expensive in the first place; but my opinion is that, when properly managed, it more than repays all expenses in the end. I have always found this way of disposing of timber gives more satisfaction both to a proprietor and forester, the only objectors to it being extensive timber merchants. I offer the following reasons for giving preference to this method:—1. In this way trees can be felled much more satisfactorily, being done by the proprietor's own men.—2. Timber can be properly classed, and sold in lots to suit purchasers.—3. By selling it in small lots, greater competition is created, and a higher price generally realised.—4. Being divided among several purchasers, it can be sooner removed off the ground.—On the first reason it is not necessary to make many remarks, as every one acquainted with the matter knows that men who are constantly employed on an estate take an interest in doing their work as well as they can, for the sake of their own character; while timber-merchants' men attend only to their masters' view of the matter; and the only interest they generally show, is in dressing off the end of the tree they have cut down, not caring if, in doing so, they severely injure several other trees. The second reason stated above speaks strongly in favour of this mode of disposing of timber, as classing is what may be called the vital point in this part of a forester's business. There are many different trades carried on, requiring different classes of timber. If a large mixed lot is sold, it is not a consumer, but a dealer, who becomes the purchaser, who then sells it out to different parties as their various wants require. Now by classing the timber and selling it in small lots, this third party is done away with, and different consumers can come forward and buy what suits their purpose. In support of the foregoing statement, I may mention a case that came under my notice a short time ago. The lot offered for sale was mostly Plane or Sycamore trees, and was exposed for sale by tender. Three timber merchants gave in offers for it, the highest being £30; but as that was considerably under the reserved valuation, the timber was kept and sold by auction some time afterwards, when a manufacturer of Sycamore furniture being present, it was knocked down to him at £46. The same party who offered by tender £30, offered £45 at the auction sale. As regards the third reason given above, it is clear that if a lot of timber is sold worth £1,000, the number of people who can make the purchase is very much smaller than if the same quantity of timber was exposed for sale in a hundred separate lots. The class of purchasers who are able to purchase the smaller lots have, where large quantities only are sold, to purchase at a greatly increased price from the larger buyers. The fourth reason I have given for preferring this

* Read by David Tait, Owston Park, Doncaster, before the Scottish Arboricultural Society.

method of disposing of timber is of some consequence on estates where the proprietor is in favour of preserving game, as in that case it is a nuisance to have carters coming into the woods to lift timber at certain seasons; therefore, by having say twelve purchasers, the timber can be much sooner removed than if there was only one purchaser for the same quantity.

On the estate where I am at present, the timber was formerly sold standing in one lot; but not proving satisfactory, it has lately been sold by auction in small lots, after being cut down; and since that method was adopted, we have had coal-pit proprietors, contractors, bobbin-makers, boat-builders, pianoforte-makers, mill-owners, &c., attending our sales, and buying what suited their various wants. To give an idea of the cost of felling and putting the timber into lots, I give a statement of what was paid here this year for that work:—

16,172 feet of timber realised	£727	0	0
Topwood	23	0	0
	£750	0	0
Cost of felling	£50	10	0
Cost of putting into lots, including horse hire	19	18	6
Cost of cutting out topwood ...	5	7	6
Cost of lotting ditto ...	3	13	6
Deduct —————	76	9	6
Profit	£670	10	6

The above quantity of timber was sold in 112 lots. In carrying out the sale, I had every tree measured exactly as it was cut down, and the contents marked on the end of the tree; and afterwards, when they were put in lots, I was enabled to get the exact contents of each lot by copying it off the trees as they were brought forward. I had different sorts and qualities kept in separate lots, the size of a lot varying from 100 to 1,200 feet. No doubt the sum of £80 looks a large amount to pay for labour, but it would have been impossible for timber merchants to do it so cheaply; and although there is no way of knowing exactly what the difference would have been had the timber been sold standing, yet, from previous experience, I have no hesitation in saying that we would have got for it much less than the net profit realised. I will now make a few remarks on the selling of timber by tender. In certain cases I highly approve of this mode of disposing of timber. For instance, if it is a quantity of Oak, or Scotch Fir, or any other lot of timber of one class; but I certainly do not recommend it where a mixed lot is to be disposed of, as all the advantages which I hold are to be gained from classing the timber are entirely lost. One great advantage of this method is the cheapness with which a sale may be effected. Of course, I recommend it to be cut down previous to being sold; but where it is desirable to sell a lot of timber standing, I recommend tender instead of auction sale. When sold in this way, the plan generally adopted is to inform the timber merchants who are likely to become purchasers, by circular of the number of trees and quality of timber to be disposed of, and the date by which the offers must be sent in, said offers to be in accordance with conditions of sale specified; and as none but timber merchants of good standing would be informed of the sale, the highest offerer should become the purchaser, upon agreeing to and signing the conditions mentioned.

Selling Timber Privately.

This mode of selling timber—although adopted on some estates for disposing of large quantities of timber, both standing and fallen—is only suited for supplying a local dealer with a few trees (by privately I mean where only one merchant is invited to become purchaser). As competition is the life of trade, I prefer it in every instance where it can be brought into play. And if a lot of timber reaches the value of £20, I should certainly say, sell it by tender. When there are only a few trees to be sold, they should be cut down and measured, the market price per foot being charged for them.

Selling Timber in a Manufactured State.

On some estates there is a saw-mill, at which timber is cut up into boards, palings, stobs, pit-props, gate-posts, &c., and

sold. Some people recommend this method as a profitable way of disposing of inferior lots of wood; but I think there are stronger reasons against than in favour of it. For instance, to keep the saw-mill going, some trees are very likely to be cut down and sawn up that ought to have been left growing; besides, I have no doubt the extra money got for the wood is spent in manufacturing it, as there are not the appliances or division of labour to work with that are found in an establishment fitted up for that particular trade. I am certainly of opinion that on every large estate there ought to be a saw-mill, especially where water-power is available; but this should be used only to cut up wood for estate purposes, or to supply the tenants with fencing material at market price. I have not said anything about “conditions of sale” in regard to any of the methods mentioned, as different districts require different conditions; but care should always be taken not to make too loose arrangements about the payment for timber, as many people seem to have an idea that timber should almost be given away. Now, as timber is a crop that stands long before giving any return, one would think the very reverse should be the case; yet I am aware of certain districts where there is no difficulty in getting payment in three months from date of sale, or by giving 5 per cent. discount of getting ready money; and still on some estates in the same district, twelve months’ credit, or 10 per cent. discount, is given.

Perhaps a few remarks on the disposing of forest produce, that does not come under the classification of timber, as well as the different uses it is put to, may be interesting to some of the members of this society. In some parts of England there is a ready market for Hop-poles, rails, hedge-stakes, rods for Scarlet Runners, Pea-stakes, thatch-pegs, and top-wood, made up in faggots or bundles. In Worcestershire Ash is grown as coppice-wood, and cut down at about sixteen years’ growth for Hop-poles, Bean-rods, &c., and is generally sold at about £14 to £16 per acre, the purchasers doing all the work, and leaving about sixty plants to the acre to grow to a larger size. Every little piece of wood is used up; and, last of all, the small tops, or brushwood, are tied up in faggots, and sold at the rate of 2s. 6d. per score. These are used in all the west and south of England, and throughout Wales, for heating ovens for baking bread, brick-ovens being used in that part of the country. As far as has come under my notice, that appears to be about the general price for faggots. In some places the tying up of the faggots is let by contract, the price paid being about 8d. per score; and in some parts of Wales I have known arrangements made with a dealer who paid 3s. for every 100 bundles he tied up, himself finding men to do all the labour. This, however, was within three miles of a coal pit. In the same neighbourhood rails, net-stakes, &c., are sold at 1d. per yard. In Yorkshire small rods, $\frac{1}{2}$ an inch in diameter, and 3 feet long, are sold at 6d. per 100, and are used by farmers in thatching stacks. Stronger rods, and 8 feet long, are used for Scarlet Runners to climb up, and sell readily at 6d. per score. The same class of rods also sells readily to crate-makers, and picked rods about the same size are sought after by skip-makers, for which a better price can be got. (Skips are a sort of crate used at manufactories for packing the finer sorts of cloth in.) Hedge-stakes are sold at 8d. per score, and are about 2 inches in diameter and 5 feet long; net-stakes, which are straighter and stronger, sell at 18d. per score; rails sell about 1d. per yard, and may be described as a size less than pit prop-wood. Small wood tied up in faggots is unsaleable in that part of the country, no brick-ovens being used. There is a partial call for the small top-wood at 1s. per cart-load. No doubt in future the increased price of coal will create a greater demand for all sorts of firewood throughout the country. In Scotland there is little demand for small top-wood, which is either burned up or left for game cover. There is also little done in the way of disposing of the rods cut up in brushing a plantation, although there are some exceptions. On some estates I have known Pea-stakes sold at timber sales by auction. I have also known rods for crate-making being sent a distance of 40 miles at a remunerative price. There is no doubt that by a little exertion a market might be found for a large quantity of such produce as above described, at least on estates situated near a railway-station, within 30 or 40 miles of a manufacturing town.

THE KITCHEN GARDEN.

POTATO CULTURE.

Late Planting and Seed-preserving.

FORMERLY, the end of June was the ordinary time for planting late Potatoes for winter use; and when St. Swithin brought round his annual watering pot, the young roots and leaves were refreshed and benefited thereby, for at that stage moisture is necessary to the growth. Then the usual dry weather of August, September, and October (with occasional showers, chiefly beneficial about the end of August) assisted the development and maturity of the tubers, which (the haulm having safely died down) were lifted at leisure when more pressing operations were over, because no excess of rain can injure them after the skin is well set. Since the general rot, panic has introduced a totally different system. We plant late Potatoes, as well as early, in March; the season favouring, these latter sorts are almost ripe in July, when down comes the rain, as it always has done. The haulm is now drenched, blown about, and bruised; decay sets in, subsequent warmth develops insect life, mould may follow, and being, as is generally affirmed, struck all at once with blight, the tuber rots in consequence—the result being aggravated by the wet soil—and the crop is more or less spoiled. Possibly the seasons have also somewhat changed, and we have often more summer rain and wind than was formerly experienced. But, though this may be a reason for watching the season, and probably for taking special precaution to guard against excessive moisture, it surely affords no valid ground for changing the time of planting as has been done; more especially, as on the early plan, if the long days of midsummer prove dry, the Potatoes having ripened or set prematurely, without the haulm being decayed or checked by frost, any subsequent rainfall, being unable to expand the tubers, sets them off growing out, and spoils the crop in another way. When the tuber is more lately developed, and the haulm dies down, sprouting need no longer be feared. Such special precaution against excessive moisture as here recommended is taken by placing the seed upon instead of under the ground, and covering with a hoe from 4 to 6 inches high; 3 feet 6 inches or 4 feet between the rows will suffice. After the haulm appears, hoe up, from time to time, as high as the space will permit, when the ground between may be planted with winter crops. Cultivated on this plan, even if rain be excessive, the Potatoes may be kept drained; and then, though the haulm decays, the tubers do not. Such, at least, has been proved by experience. Nor is cutting off the haulm, as often recommended, of the slightest value. On the contrary, such a proceeding checks the growth of the healthy tubers, without in any manner saving those which are injured. Whenever heavy rain falls after the blossoming period, the crop may be saved by lifting at once, without waiting for appearance of disease; but the tubers will be unripe, small, and soapy. On the whole, it may be best to leave them to take their chance, whatever happens. This year, early sorts just pressed on the soft ground in rows 9 inches apart, and ridged up as above, were ripe somewhat earlier than others in the neighbourhood planted in the usual way under the ground surface. Late sorts put in at the end of June proved a failure in crop, because, in the particular locality, there was no rain at the usual time in July. Rain late in September brought extensive disease into the neighbourhood, many crops being entirely lost; whilst those on the above-ground plan suffered only to a limited extent from this cause. The haulm was injured; but, wherever any tubers were affected, they were near the top of the ridge, not sufficiently covered in, and therefore damp; but those not thus drenched by the wet were invariably sound. It should be stated, by way of warning, that it takes a couple of years, perhaps, to make the late planting fully answer; because tubers grown early one season may not be so vigorous when kept long enough for late planting the following year. The aim should be to get dry weather during the ripening month; therefore the time should be regulated by the average of seasons, which, as before indicated, will usually be rainy in July, and dry in September. One cause of deterioration in the Potato plant itself may be the custom of exposing tubers for seed to the air, which turns them green, enables them to be kept longer without sprouting, and prevents worms and slugs from eating them when planted, because they are thus rendered poisonous. But if thus poisonous, surely the seed cannot be in a healthy state, and so well calculated to yield healthy produce as when sound; and if so, a continuation of a baneful practice from generation to generation must, one would think, materially deteriorate the power of the plant to resist other evil influences. Now it is not in any degree necessary to treat the seed tubers in this manner in order to prevent their sprouting before being planted. For twelve years seed Potatoes have been planted without having shot out more than was desirable; and they have not been separated from the store for use, all of which have been prevented from shooting

by the simple expedient of keeping them cool in layers above ground, not exceeding 12 inches deep—in a store entered from an inner door, with 9-inch walls, battened with felt and boards, which is quite sufficient to keep out frost. Every fifth layer of bricks projects inside, and on these off-sets narrow boards slide so as to form shelves, as deep as may be required to keep each layer separate. There is, therefore, free ventilation between, aided by a hole a foot square at the top of one outer wall, closed by a shutter during frost. The top space, above which the outside ventilation is placed, is also roughly covered, affording another space underneath the tiles. In this store above ground, managed without straw, the Potatoes are kept without sprouting of any consequence, and perfectly sound, till the end of June, when early new sorts are ripe, and the late seed, preserved in the same way as those which have been eaten, are planted. T. B.

[The above, from a recent issue of the *Field*, embodies a new view of the subject, and seems to deserve the attention of cultivators.]

SINGULAR MUSHROOM GROWTH.

THE Mushroom, of which the annexed is a representation, has recently been sent to us by Messrs. Osborn, of Fulham. The small "button" Mushroom on the top, doubtless owes its elevation to the pedestal, to which it is attached, carrying it upwards before it had established itself sufficiently in the bed to turn its more vigorous-growing support aside.



Singular Mushroom.

Though an instance of merely accidental growth, such an anomaly is worth recording as a curiosity.

Celery.—What is the best variety of solid white Celery? This season I have grown the Leviathan White, which is quite hollow, or piped, and, therefore, useless for market purposes. I have grown Sandringham White, an excellent dwarf sort, but very short. Dixon's Mammoth White was an excellent sort when first introduced, but latterly it has been good for nothing, and, as I grow large quantities, it is requisite to have a first-rate variety.—W. C., *Whitehaven*.

Tomatoes.—I have been a large grower of these for some years past, and, during the last two years, I have grown every known variety of Tomato. I have two collections, one of which I grow against the walls in the open air; the other I grow on for a time in pots in cold pits, until they begin to flower, then I place them in a warm situation in the open air to get them to set their fruit, when I remove them to a warm house to colour and ripen it. Those which I have taken prizes with at South Kensington were grown under glass. During the past two years, the Tomatoes have done so badly here out of doors, that I have been obliged to gather the fruits and hang them up in a Vinery to ripen, but I manage to keep up a succession of ripe fruit, more or less, from the beginning of June to the end of November. The following is a list of the kinds which I have grown this season, viz.:—Maupy's Supreme (a very prolific and handsome variety), Orangefield (very handsome), Keep Early Prolific, Sim's Mammoth (a small but very prolific variety), Hathaway's Excelsior (very handsome), Hubbard's Curled Leaf, Hepper's Goliath, Hepper's Sensation, Trophy, Yellow Fruited (very prolific), Early's Defiance (a very early handsome and prolific variety), Tree or De Saye, Large Red, General Grant, Pear-shaped (very prolific) Red Cherry, Yellow Cherry, Currant, or Grape.—W. G. PRAGNALL, *Sherborne Castle Gardens, Dorset*.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Conservatories.—These are still gay with *Chrysanthemums*, tall plants of which have a fine appearance when placed amongst such evergreens as *Camellias*, *Rhododendrons*, *Acacias*, &c., while the shorter ones, including trained specimens and late-struck plants of the large-flowered sorts, as well as the *Pompon* varieties, do well for front stages and similar conspicuous positions. By keeping some of the plants in a north house, well ventilated, a late succession of flowers will be the result. Water the plants plentifully with pure water, and remove all suckers from their base except what are required for purposes of propagation. After the plants have done blooming, cut them over, and keep the roots in the pots in a frame or pit till spring, when the young suckers may be propagated; in fact, if required, these may be struck now. *Camellias*, to which a little forcing has been given, are freely coming into bloom, therefore keep them moderately moist. *Azaleas* should be occasionally syringed with tobacco-water, laying the plants on their sides, so as to wash away thrips and other insects. Keep *Rhododendrons*, *Acacias*, *Eugenias*, *Correas*, *Myrtles*, *Conifers*, and other evergreen plants, only moderately moist, but never allow them to become altogether dry. Delay pruning them until early in spring, but thin out any portions likely to damp off, or that are too thick to permit of a free inroad of light and air. Give *Solanum Capsicastrum* and pseudo-capsicum copious waterings, otherwise they will be liable to lose their leaves, keep some of the plants in a cool airy house, to prevent them from ripening their berries before spring. Introduce a few plants of *Aucubas*, well furnished with berries, into a warm temperature to ripen and colour their fruit. The bright red berries of *Rivina lœvis*, and the purplish ones of *R. humilis* look well amongst green foliage in the conservatory, but the plants must be kept in the warmest corner. *Skimmias* and *Pernettyas* are likewise ornamental berry-bearing plants, which, although hardy, look well in the coolest parts of the conservatory. Good specimens of *Centaurea ragusina* that have been grown in pots during the past summer and autumn, healthy and well-filled pots of the variegated *Panicum*, and nice plants of *Isolepis gracilis* make pretty ornaments, that last in beauty throughout the winter; and now the variegated form of the common Club Moss (*Selaginella Kraussiana*) has assumed its whitest hue, and forms an attractive edging. Chinese *Primulas*, especially the old double white, are flowering freely, and the finer ones should be kept near the glass and well watered. *Cyclamens*, that have been forced a little, are also in flower, but such as have been grown on moderately, will not be in perfection for some weeks yet. They enjoy a minimum temperature of 45° in winter, plenty of water, a position near the glass, and good ventilation to dry up atmospheric damp, which causes the flowers to spot. Heaths, such as *Erica Caffra*, the autumn-flowering variety of *Gracilis*, *Colorans*, *Hyemalis*, and a few others are in full beauty, and the general stock must be kept in well ventilated houses, and dusted with flowers of sulphur in the event of mildew making its appearance. Now is a good time for staking and tying specimens of Heaths. Summer-struck *Fuchsias* make nice flowering plants in winter, and the old plants that bloomed during summer and autumn may now be laid on their sides under the stages of greenhouses, there to remain in a dry state till required for starting again into growth in spring. Prune those trained on rafters so as to admit plenty of light, but do not prune pot plants until they show symptoms of growth. Such *Begonias* as *Saundersii*, *fuchsoides*, *spatulata*, and summer-struck plants of *Weltoniensis* are now blooming freely, and must be kept in a warm place. *B. manicata*, if kept moderately moist and warm, yields a great profusion of blooms after the new year. Hybrid herbaceous *Begonias* will now have died down and, consequently, the pots containing them should be laid on their sides and kept dry till spring. This is the most suitable month in the year for potting Japan Lilies. When the stems have died down cut them over, then turn out the contents of the pot, and be careful not to injure the fleshy roots attached to the base of the bulbs. Put one or more bulbs of equal strength in each pot, filling the latter with a rich open soil to within 2 inches of the brim, and when finished do not give any water but, on the contrary, place the pots where they can remain quite dry till spring. No water should be given until the shoots begin to grow, and then a little may be applied carefully around the edge of the pot. *Clerodendrons* of the *Kompferi* section, *Daturas*, *Plumbago capensis*, *Aloysia citridora*, early flowered plants of *Cassia corymbosa*, old specimens of *Heliotropes*, and *Hydrangeas*, *Lagerstrœmia indica*, and others, may be stored under greenhouse stages, and kept dry until spring. Re-pot plants of tree *Mignonette* if necessary, taking care not to injure or break the ball of roots in the operation, and apply a stake to each plant. Succession plants of the common *Mignonette* may be kept in pots in cold frames, merely protected from frost and rain. *Bouvardias* are excellent winter-blooming plants, requiring a temperature of 45° at

least; *B. jasminiflora* and *Vreelandii* are amongst the best. *Calceolarias* and *Cinerarias* should be kept in cool and well-ventilated houses or pits, near the glass, and well supplied with water, and every leaf showing symptoms of damping off should be picked off as soon as the evil is discovered. Tie out the shoots of specimen *Pelargoniums* as low as the brim of the pots, and keep the plants pretty dry and near the light. Zonal *Pelargoniums*, if only kept moderately moist, and subjected to a temperature of 55°, will be induced to flower pretty freely, and thus yield a little cheerful bloom during the dull months.

Stoves.—The average minimum temperature of the stove at this season should range about 60°, though, generally, the warmest part of it is a few degrees higher. Ventilation should be given at the top on fine days, cold currents being always avoided, and the sashes should be closed early in the afternoon. All evergreen plants should be kept moderately moist, but, if anything, a little on the side of dryness; keep deciduous ones rather dry, and the syringe should now be scarcely or ever used. *Caladiums*, *Achimenes*, *Gloxinias*, some *Alocasias*, *Kompferias*, *Gloriosa Plantii*, and some others, must be kept dry in their pots till spring, when they should be re-potted and started in a little bottom-heat. The varieties of *Epiphyllum truncatum* and *Russellianum* are now in full beauty, and may be transferred to the coolest part of the stove. *Aphelandra Roezlii* is now also one of the gayest of stove plants, and requires plenty of water. The earliest of the *Poinsettias* will by this time have developed their brilliant floral leaves, and must be kept in a warm place and have plenty of water, otherwise they are apt to lose their foliage. Keep succession plants in brisk heat, also those of *Euphorbia jacquiniædora*, the flower-buds of which are now set. *Asystasia capensis* and *Torenia asiatica* make fine winter-blooming plants for baskets, and require no care beyond dipping them occasionally in tobacco-water, as the *Torenia*, especially, is rather subject to greenfly. Amongst other plants now in flower in stoves are *Strelitzias*, the yellow *Justicia calycotricha*, the drooping *Thysacanthus Schomburgkianus*, the white *Cestrum diurnum*, *Medinella farinifera*, the old-fashioned blue *Eranthemum pulchellum*, the beautiful white *Pancratium caribæum*, *Eucharis Amazonica*, *Begonias*, *Poinsettias*, *Melastoma Malabathrica*, *Pitcairnia odorata*, *Bilbergia splendens*, *Rondeletia speciosa*, *Euphorbia Bojeri* and *splendens*, *Mussaenda frondosa* and *luteola*, and many others. If *Ixoras* have broken well they may now be potted without disturbing the roots further than removing a few inches of the surface soil, and use pots 3 inches larger than those they previously occupied, and only good peat and silver-sand as a compost. *Dipladenias*, too, if they have broken well should be re-potted, but in their case the old soil should be shaken well away from the roots without hurting the latter, and they should be re-potted in good open peat and plenty of sand. Both *Ixoras* and *Dipladenias* should be kept rather dry after this shift. Keep *Allamandas*, climbing *Clerodendrons*, and *Bougainvilleas* quite dry at the root; winter them in a temperature of from 50° to 55°, and neither cut nor prune them. Plunge well-rested plants of *Eucharis amazonica* in a brisk bottom heat, in order to induce them to flower. Pot young plants of *Cyperus alternifolius* for decorative purposes next year, using a rich soil and give them plenty of water.

MARKET GARDENS.

The fine weather experienced during the past week or two has been favourable for the performance of ordinary garden operations, which are being forwarded with expedition. Unfruitful and old trees should be rooted up, and the branches of others thinned out; all refuse, too, should be collected together and burned and the ashes should be saved for strewing amongst Cauliflowers and Lettuces in frames, to preserve the plants from damping off. The ground beneath the trees should then be manured and dug and Coleworts planted on it at once. The Coleworts will be fit for market before the trees burst into leaf in spring. Clean Asparagus ridges by drawing off the surface soil into the alleys, which should be deeply dug, and all weeds well buried. If required, a crop of Coleworts may be planted in the alleys. Trench all vacant pieces of ground after giving them a good dressing of manure, and lay them up in rough ridges, to be acted on by the winter's frost. Transplant Cauliflowers under hand-lights in the open ground. For this purpose mark off the rows 6 feet wide; on these place the hand-lights about 4 feet apart, and put nine plants under each light, which should be protected at the base, with some soil so as to exclude cold currents of air. Attend to tying up Endive, weeding Onions, hoeing amongst Spinach, and picking Parsley. Dust lime over all crops growing in the open air, especially near hedges, in order to obviate the attacks of slugs. Lettuces in frames must be fully exposed on all favourable occasions, and damp, in the way of drip or rain, should be guarded against. Sifting some dry sand over the beds helps to keep the plants in good condition. Clean Rhubarb beds, dig between the rows, place some litter over the crowns, and lift as many roots as are required for forcing.

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

May I ask for a little space, in order to answer questions arising out of my letters in your numbers of the 1st and 22nd inst. First question—Ought we not to have gone first to the council? Answer—To which council? The old council had decidedly resigned; the new council, brought in mainly by votes of the householders living round the garden, is said by a great law authority to have been illegally elected; and, besides, it would have been rather awkward to ask from a council, in office through Kensingtonian interest, assistance in detaching its horticultural part from the society, which horticultural part gives its only excuse for keeping South Kensington Gardens as a private recreation ground for the neighbourhood. A committee existed which had been appointed to watch events in the interests of horticulture; this, if it had no very great power was at least legal, and, in being so, its leaders were consulted and their names head the appeal to the fellows. Another question was—Why cannot the guinea-fellow plan be grafted on the society in its present state? Answer—That this would make the society still more cumbersome and unmanageable even than at present. And now let me make another appeal to horticulturists in the country to come forward and, at least, say what they think of the guinea proposal. You have, I believe, many hundred clergymen subscribers, a class which, I believe, does quietly more for horticulture than any other in this country, would they go in for a guinea society? or, as there are some with so many calls upon them that they have still better uses for their guineas, and who yet have great power and influence, would they bring in some neighbours. Will any country gentleman or lady subscribe for themselves, or for their gardener? Will any leading gardeners subscribe for themselves? It seems most desirable that the reconstituted society should, like horticulture itself, embrace all classes; while it is well known that there are good horticulturists near the throne (I can speak of having been more than once quietly round a show with a Royal Highness, who not only knew flowers and fruit well, but who, judging by his criticisms, would stand first on the list as a judge of table decorations). Who has not seen small cottage gardens with clumps of white Lilies, or yellow Crown Imperials, or double-lilac Primroses, which the finest gardens might envy? Let me remind anyone who may be considering the subject of fellowship that the proposal is, that the tickets shall be transferable (though restricted, from financial reasons, to the same person the same day); so that any country gentleman would, for a guinea, be really helping the formation of a healthy horticultural society; be able to vote, by proxy, on its management; and, at the same time, send his transferable ticket, admitting to all shows, to some relative or friend in town. And now let me say that there are influential horticulturists in London ready and willing to construct a real working Royal Horticultural Society; but, to enable them to do so, the horticulturists through the country must come forward and say that they wish for such a society, and will join it and help its progress. If they will do so, we shall at last have a society with real power; but, if they will not do so, the plan cannot at present be carried out. But I cannot think that this last will be the case; everything points, not only to increased numbers of gardens, but to increased love of gardening, of flowers and fruit, to increased study of them. Such facts speak volumes, and surely every one who takes in a gardening paper ought to become a guinea fellow, and *vice versa*. But let us for one moment take the gloomy view, and suppose that the country horticulturists will make no sign; all that then can be said is, that it may be hoped that there will be no more unkind criticisms—no more saying "the society is only an appendage of South Kensington Museum;" that "the influence of the commissioners is paramount on the council;" that "the main object of the Horticultural Society's funds is to keep up a great brick-and-mortar garden for the use of the nursemaids and children of the neighbourhood, therefore we don't hold out the hand of good-fellowship to the society." It now rests with the country horticulturists to make the Royal Horticultural Society free—independent alike of Kensingtonians and of Her Majesty's Commissioners; and, in the opinion of those who know it best, until that happy result be accomplished, the society can never be really vigorous, or worthy to represent British horticulture.

GEORGE F. WILSON.

MR. G. F. WILSON's proposal on the subject of the Royal Horticultural Society seems to call for an answer from some one who is not a fellow. I am not, I never have been, and, under its present management, I have no wish to be, a fellow. It has always appeared to me that hitherto there has been nothing to attract people like myself, who reside at a distance from London, who cannot afford so large a payment merely for the luxury of putting F.R.H.S. after our names, and who have no proof of any good work done by the society outside the walls of the gardens. If I lived in Kensington it might

be different. I should then consider the large payment by no means too large, and I should consider that I had a full equivalent for the money in the pleasant promenade provided for myself and my family. If Mr. Wilson's proposal were carried out, the case would be at once altered. A much smaller subscription for those residing beyond a certain radius would at once attract a large number; others would be attracted if the society could do some practically good work for gardeners and botanists. We ought to be able to look to the society for the introduction of new and rare plants, which it might effect either by having its own collectors, or by a large system of exchange with foreign gardens. There are many other points, but I will not further occupy your space.—H. N. ELLACOMBE, *Bitton*.

In a memorandum which we have just received from the Royal Horticultural Society, it is denied that its present council was illegally elected, as some have set forth. It also states that all rent due to the Commissioners has been paid regularly, and that no arrears whatever are due to them; on the contrary, that the Commissioners owe the Society £1,043 for rent over-paid in 1872. It asserts, moreover, that it is not correct to say that the society has a liability of many thousands which it cannot meet; it has met all its liabilities of the present year, and has discharged a large portion of the heavy arrears left by previous councils. The society, it is said, has regularly fulfilled all its obligations towards the debenture holders, according to the terms under which the loan was contracted, which are printed on each bond; and it would be illegal for the council in any way to modify those terms.

THE HOUSEHOLD.

VEGETABLE RECIPES.

Celery.—Dumas recommends an excellent dish of cooked Celery. —*Cèleri au jus à la bonne femme*: Trim carefully several heads of Celery by taking off all the green and hard leaves. Cut the heads to one length. Make a light *roux*, toss the Celery in it, and moisten with stock. Add salt, pepper, and grated nutmeg. When the Celery is done, finish the sauce with gravy or butter.

Salsify.—*Salsify* must be thoroughly scraped and thrown into water slightly acidulated with vinegar, and then—when washed quite clean—boiled in water with vinegar and salt. When the Salsify is done, it will break under the finger. It must then be taken up, drained, and served with melted butter. When it is intended to be fried, Salsify should be first boiled in water with a good deal of vinegar, then dipped in good batter, and fried in clarified butter as usual. The humble Cabbage is not despised by the author of the "Dictionnaire," who speaks as follows of

Cabbage.—*Chou au lard*: This is an excellent plebeian dish, and may be made thus: cut a big white Cabbage into quarters, blanch it and put it into a saucepan with bacon, sausages, saveloys, Celery, Onions, Carrots, Laurel leaf, and Thyme. Stew gently for an hour and a half at a slow fire. Pile up the Cabbage on the dish, putting the meat and saveloy at the top. Remove the other vegetables and make a sauce by reducing the gravy.—*Chou farci au gras*: Take a fine Cabbage, cut out the stump and part of the middle; blanch it, and take out of the water when done. Spread open the leaves carefully, so as not to break them, and fill the cavity with a stuffing made of chicken, veal, bacon, beef-marrow, or the fat of cooked ham, Mushrooms and truffles, chopped Parsley, Shallot, salt and pepper, bread-crumbs, two entire eggs, and the yolks of two or three more, together with a morsel of Garlic. Chop it all together, and pound it well in a mortar. After having filled the Cabbage with this stuffing, close it together again and tie it up firmly, so as to retain the stuffing and put it into a stewpan; then make some gravy with slices of beef or veal, and reduce it in a stewpan; put in a little flour, give it a colour, moisten with good stock, season with sweet herbs, and slices of Onion. When the gravy is half done, mix the slices of meat and the said gravy with your Cabbage, and stew all together. Put the Cabbage on a dish, pour over it a well-seasoned *ragout* of Mushrooms or sweetbreads, then serve hot with the gravy poured around. In this latter dish, good as it is, the original Cabbage plays a very insignificant part. Fanatical admirers of what is called plain food will doubtless deplore the employment of so many good things merely to raise a plebeian vegetable to a transcendental pitch of factitious glory. This is a dish peculiar to southern France.—*Chou en garbure*: After having blanched and drained several Cabbages, cut away the thickest leaf-stalk; then take a soup dish that will stand fire, and place at the bottom of it a bed of Cabbage leaves, then a layer of Gruyère cheese sliced very thin, and cover this with slices of bread. Continue to make layers in this order—Cabbage, cheese, bread. Then season, moisten with good stock, simmer and *gratiner* for one hour, and serve as a soup with some stock in another tureen.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but

THE ART ITSELF IS NATURE."—*Shakespeare.*

ROCK GARDEN AT EASTER DUDDINGSTON LODGE.

By JAMES M'NAB, Royal Botanic Gardens, Edinburgh.

SOME time ago I gave, through the pages of *THE GARDEN*, a brief notice of a form of rock-garden which was being constructed at Easter Duddingston Lodge, near Edinburgh, the residence of Charles Jenner, Esq. He is a most devoted admirer of Alpine scenery and its floral adornments, as well as an enthusiastic cultivator of Alpine and herbaceous plants, and his collection of these gems is probably one of the largest private ones in Scotland. Mr. Jenner has long expressed his distaste for the present system of flower-garden decoration, and I quite agree with him, particularly as regards the style adopted in most villa gardens, when arranged on a flat surface, as the ground is often left bare, or partly so, for seven or eight months in the year, while, during the remaining four or five, although the flower-plots are in a state of perfection, they present the same stereotyped appearance day after day, with which the eye soon becomes satiated. Another drawback to this mode of gardening is, that no sooner are the plants in full bloom than they are cut to pieces for the purpose of propagating a stock for the following season. Mr. Jenner's method does not altogether do away with the modern system of bedding-out, as his flower-beds, although on a level surface, are arranged with sloping stone sides, about 2 feet high, for the



Ornamental Rock-bed.

cultivation of dwarf Alpines, while the flat surface of a few are used for some of the better class of bedding-out plants, thus combining a botanical with a floricultural decoration. In most of the beds, the surface is planted with choice dwarf American plants of the following genera:—*Menziesia*, *Daboecia*, *Andromeda*, *Epigaea*, *Ledum*, *Vaccinium*, *Kalmia*, *Polygala*, *Chamaebuxus*, *Alpine Rhododendrons*, *Dryas*, dwarf *Alpine Arbutus*, and *Azalea procumbens*; also hardy Heaths, and many others requiring peat soil, all being tastefully interspersed with specimens of corals, quartz, and choice rock stones. These raised beds are all arranged in geometrical order, averaging about 20 feet long and 9 feet wide, the centre beds being circular, and having the plants in them raised in the middle, as will be seen by the annexed illustration. They are surrounded with angular stone divisions or pockets in two rows, for the cultivation of Alpine plants. These side stone divisions, after being thoroughly drained, are filled with a mixture of peat, loam, and rough sand, which seems to suit all the kinds well. Where the large central compartments are used for summer bedding and ornamental-foliaged plants, after their removal in autumn, they are filled with the roots of Hyacinths and Tulips, which keep them gay during the spring months. When their flowering is over, the bulbs are lifted and again replaced with summer bedding plants. I quite agree with Mr. Jenner that the beds filled with dwarf American shrubs, or with mixed perennial herbaceous plants, properly arranged as to size and time of flowering, command a deeper interest for a much longer period, and are attended with much less trouble than the double-shift system of bulbs

and soft-wooded summer bedding plants. The cultivation of Alpines, such as *Dianthus alpinus*, *Ramonda pyrenaica*, *Trifolium uniflorum*, also the various species of *Soldanella*, *Gentiana*, *Primula*, *Astragalus*, *Oxytropis*, *Androsace*, *Campanula*, with *Saxifrages* and *Sedums* in rock-garden compartments, as practised at Easter Duddingston Lodge, affords much more gratification to cultivators than can possibly be achieved by the cultivation of the soft-wooded bedding-out plants, such as *Geraniums*, *Calceolarias*, *Verbenas*, *Senecios*, *Petunias*, *Alternanthera*, *Phlox Drummondii*, *Golden Feverfew*, &c. Dwarf Alpine plants, both shrubby and herbaceous, when in flower, possess a sort of attraction which leads to an enquiry infinitely higher than can possibly be gained by any amount of colour, which is the chief aim of the cultivator of the soft-wooded and annual bedding plants.

In large public parks, inspected by myriads of different visitors every day, the soft-wood plant adornment is not objectionable, nor in the extensive pleasure-grounds of noblemen, where the flower-beds are freely mixed with clumps of interesting succulents, which have of late years become a great acquisition in flower-garden decoration, but require a considerable amount of glass structure for winter storage. With Alpine, American, and herbaceous plant adornment, much trouble, as I have already said, will be saved, and the marketable value of such plants will yearly increase, while the value of the ordinary soft-wooded bedding stuff, from its easy propagation, is comparatively worthless.

For some years past the present system of bedding-out has had the effect of doing a considerable amount of injury to many regular journeymen gardeners. They are all well read up in the varieties of *Geraniums*, *Verbenas*, *Calceolarias*, &c., and their propagation, while their knowledge of perennial, herbaceous, and Alpine plants is woefully deficient. In many gardens such herbaceous plants have been entirely removed to make room for the all-prevailing soft-wooded kinds. In some gardens, however, although few and far between, it is delightful to observe the soft-wooded bedding plants gradually giving way to mixed borders, or clumps filled with perennial herbaceous plants, so arranged as to keep up a constant supply of flowers throughout the season, having a few soft-wooded plants coming in here and there. By this pleasing change, it is to be hoped that journeymen gardeners will again betake themselves to a knowledge of hardy perennials, and thus have mixed beds of them for every month in the year. Nurserymen can do much to bring about this desirable end, by having compartments of herbaceous plants, if not for every month in the year, at least more particularly for spring and autumn, as no difficulty will be found as to the summer kinds. I recently visited several London nurseries where herbaceous plants are extensively cultivated, and although these possessed many very interesting autumn-flowering sorts, they are generally scattered over a large extent of surface, while a piece of ground, 40 or 50 feet square, would have an interesting effect if filled entirely with hardy autumn-flowering plants, where purchasers could see at one glance the kinds they desire, without having to travel over a large surface, which is often tiresome; besides one is apt to overlook certain gems which may exist in remote parts of the ground.

GARDENING IN JAPAN.

DESIROUS of ascertaining some particulars as to the condition of horticulture in Japan, the Count de Castillon recently addressed a series of questions on this subject to M. G. Wagener, one of the Japanese Commissioners at the late Universal Exhibition at Vienna. The questions, with the answers supplied by M. Wagener, have been published in the last number of the *Revue Horticole*, from which, thinking they may interest many of our readers, we translate as follows:—

Question. In what condition is the culture of fruit trees amongst the Japanese? Do they think much of this branch of horticulture, or practise it on a large scale?

Answer. The culture of fruit trees is well understood in Japan, and carried out on a tolerably extensive scale. They have special gardeners for this branch, and even some who confine themselves to the culture of a single species.

Q. Have they got many varieties of each of the following kinds:—

Pears, Apples, Kakis, Oranges, Figs, Vines, Peaches, Apricots, Plums, and Cherries?

A. Yes; the varieties are, for the most part, pretty numerous, except in the case of Apples, of which they have only a few very bad sorts, and which they do not think much of [naturally enough]. Of Pears they have about twenty varieties; of Kakis about fifty. They have many kinds of Oranges, the best of which are grown at Kushin. Of Figs there are two sorts, one similar to those grown in Europe, and one with much smaller fruit [probably *Ficus hirta*]. The Vine is particularly cultivated at Kushin, at the foot of Mount Fusi-Yama. The Grapes produced are well-flavoured, the bunches large, and the berries much larger than those of the Chasselas de Fontainebleau. Unless I am mistaken, they grow none but white Grapes. Of Peaches and Apricots there are about twenty varieties. The Peaches are not very good, but at Kioto I have eaten a fruit, handsome and well-flavoured, of some kind intermediate between a Peach and an Apricot [probably a Nectarine]. The varieties of Plums are about a hundred in number. The Cherry trees, which are great favourites with the Japanese (especially the double-blossomed kinds), seldom bear fruit, and when they do, it is small and of bad quality. The Japanese, in general, have a bad habit of eating fruit before it is ripe, and it is in this condition that it is usually seen in their markets, so that it is sometimes difficult to judge what the real quality of the same fruit would be when ripe.

Q. Do any species or varieties reproduce themselves freely from seed (pippins or stones) without the aid of grafting?

A. No; all kinds of trees, without exception, are propagated by means of grafting. The Japanese graft even the Wax-tree (*Rhus succedanea*).

Q. Do they ever endeavour to raise new varieties from seed, or are they satisfied with a few kinds that were well-known ages ago?

A. The fruit-growers are constantly endeavouring to raise new varieties from seed, and are very careful of those seedlings that present any marked peculiarity.

Q. What are the modes of grafting most generally employed? Are they, in their details, precisely similar to the methods in use in Europe?

A. The modes of grafting are, for the most part, identical with those employed in Europe. Works on this subject, with very accurate drawings, are published in Japan.

Q. Is the pruning of fruit trees conducted on any rational system, so as to bring them into a form suited to the species, variety, and mode of growth of each kind and of the stock upon which it is grafted, or to hasten, maintain, and regulate their fructification?

A. The pruning of fruit trees is considered a matter of very great importance, and exact rules are laid down for the pruning of each particular kind of tree. For instance, in the case of Pears, which are largely cultivated between Yokohama and Yeddo, and which in the commoner kinds sometimes form large trees, the stems are grown to something over the height of a man, at which point the branches are trained in a horizontal position on Bamboo trolleys, so that a whole orchard will be covered with a flat roof of branches, under which one may walk and gather the fruit with the hand. The fruit is almost spherical in shape, about the size of a child's fist, and is covered with a greenish-yellow skin, spotted like a Reinette Apple. It is very juicy, but abounds in stringy threads like an old Radish, and is far inferior in flavour to any of our good kinds of Pear. The Japanese, however, think they are superior to our Pears—a matter of taste. The Kakis require a special mode of culture. The principal object aimed at is to have large trees, and, to this end, they cause them to rest every other year, that is to say, they allow them to bear fruit one year, and hinder them from doing so the following year by twisting the fruit-bearing shoots. Moreover, it is requisite that the trees should produce deep-searching and strong roots. To obtain these, the principal roots are surrounded with a coating of clay mixed with stones, which prevents the formation of small lateral rootlets. The soil also must be of such a nature that the roots will not meet with water until they have descended to a considerable depth. In pruning Plum trees, the branches are allowed to retain their natural mode of growth, but they are always pruned so as to allow the wind to pass through them readily. A free circulation of air through the branches is particularly insisted on.

Q. How do the Japanese proceed in producing their dwarf trees? (I have read somewhere or other that their gardeners are possessed of a certain peculiar skill in growing trees down to an amazing degree of dwarfness.)

A. It is quite true that the Japanese gardeners are very clever in producing these dwarf trees, but the process requires much time—thirty, forty, or fifty years—before it is complete. While the trees are young, they twist the shoots and put them into various unnatural positions to arrest the flow of the sap. On this subject, however, I am not well informed. They often graft branches on a stem which

has been cut down, and which is then planted in a pot. The subjects thus operated on are chiefly Plum trees, Cherries, and Peaches.

Q. Do the Japanese ever cultivate fruit trees either (1) with the permanent shelter of a wall, or (2) in tubs or other vessels, which in winter are removed into the shelter of a house?

A. Sometimes, but rarely, they grow fruit trees in boxes or tubs, which are removed into houses for shelter in winter. I have never, so far as I can recollect, seen fruit trees grown against walls in Japan.

Q. Are the Japanese acquainted with the method of forcing by means of artificial heat?

A. Forcing, by means of artificial heat, is well known to the Japanese, but seldom practised by them.

Q. Is the Orange tree grown in Japan, without shelter, in the open air? If so, what are the hardy varieties so cultivated?

A. Yes; the Orange tree is grown without shelter in the open air. Some of the commonest kinds are those known by the following Japanese names:—Mikan, Kinkan, Daidai, Kodyi, Kunembo, Youdzan, and Buskaban. A kind, known by the name of Karatachi, is very remarkable for its power of resisting the sharpest frosts, and on account of its hardy constitution, it is much used as a stock on which the other kinds are grafted.

Q. Do not the enclosed leaves of an Orange tree, which our nurserymen sell under the name of *Citrus japonica*, properly belong to the variety known in Japan as the Kum-Kouat, or by some name like this? If not, what is it called?

A. *Citrus japonica*, a tree whose fruit is about the size of a Malaga Grape, is generally called Kum-Kouat by foreigners. I don't know the origin of this name, which I have often heard, especially at Nagasaki. To the best of my belief, the Japanese members of our Commission, one of whom is well versed in botanical nomenclature, are not familiar with the name Kum-Kouat. The proper Japanese name of the fruit in question is Kin-Kan.

Q. Do the Japanese grow the thin-skinned Orange known in Europe as the Mandarin or Tangier Orange, of which I send you a leaf as a specimen?

A. The Mandarin Orange is unknown in Japan.

Q. Have the Japanese any popular treatise on fruit culture in which their practice is well explained? If you happen to have such a work by you, I shall feel obliged by your sending me a copy.

A. Yes; there are many such treatises. We have brought a few of them with us, but they are intended for presents to national libraries in Europe. I shall, however, be happy to send you some copies on my return to Yeddo.

Q. What is the value, in a scientific point of view, of the work entitled *Kwa-wi*?

A. The botanical work *Kwa-wi* is very much valued for the sake of the drawings which it contains, but the letter-press is not of much account.

Q. To what address should I write in order to procure seeds, especially of Orange trees and Kakis, and also of some stone fruit?

A. You will find no difficulty in obtaining seeds of every kind. At Yeddo, and, more especially, at Osacca, there are nurserymen in an extensive way of business, who trade in seeds, and who can supply all that you require. I shall be very happy to assist you in making your purchases, and, permit me to remark, that the best time to give your orders is in December, as I have been informed by the most eminent nurseryman in Osacca. If you will be good enough to write and inform me what seeds you require, I shall send your order to Osacca in time for you to receive the seeds by next March. Pardon me now, M. le Comte, if, in the interest of my Japanese friends, I make some inquiries of you relative to the culture of *Pinus maritima*, as it is carried on in Sologne, and the processes which are employed in the extraction of turpentine and its derived products. The Olive-tree would also be one of great importance to the Japanese; their climate I think, would suit it; as to the soil, I do not know, but I understand there is already one species of Olive growing in Japan. I shall feel obliged if you can recommend me any works treating of the culture of these two trees, and also inform me where I can procure either seeds of them or plants, to carry back to Japan. As regards fruit trees, we have been promised such a quantity of young trees, that my Japanese friends will have quite enough to begin with, especially if they persist in preferring their own Pears to ours. When I return to Japan I intend to plant a small orchard with choice kinds of Pears, Apples, Cherries, &c. I am much devoted to the culture of fruit, and those I have met with in Japan are generally not very remarkable for quality.

[We must all feel obliged to M. Wagener for his very interesting replies to the questions of the Count de Castillon, and can do no less than wish him every success in his endeavours to introduce some of our best fruits amongst the long slumbering, but now, apparently, thoroughly awakened people of Japan.]

NOTES OF THE WEEK.

— PRIMROSES have again made their appearance in Covent Garden Market, and in the season of the Chrysanthemum.

— AMONG the tropical fruits now to be seen in Covent Garden Market is the Custard Apple (*Anona reticulata*), a native of the West Indies. Prickly Pears, or the fruit of *Opuntia Tuna*, are also tolerably abundant. There are likewise smooth-leaved Cayennes from St. Michael's, some weighing as much as 8 lbs. each.

— The new number of the *Journal of Botany* contains a figure of a new and very interesting *Melanthus*, with scarlet flowers, named *M. Trimenianus*; it is a native of South Africa, and will, no doubt, prove a welcome addition to the kinds we already possess.

— WE have received from Mr. Newton, of Newark-on-Trent, some very fine Vine leaves, most beautifully tinted with crimson and gold. Some of these leaves measure 12 to 15 inches across, and have been produced, we are informed, by young Vines, struck from eyes and grown under Hartley's rough plate glass.

— *Appropos* of the interest taken just now in the fruiting of *Iris foetidissima*, we may mention that there is a very handsome variegated form of it, which does well at Battersea and other places. Mr. Andrew Henderson informs us that when grown in a stove or warm greenhouse, it develops long graceful leaves, elegantly striped with white, quite unlike those of any other plant, and much superior to those of the same plant grown out of doors.

— THE following letter has been sent to us in reference to the paragraph which we inserted last week (see p. 434), respecting the proposed new park at West Ham. It may be of interest, says the writer, to know that most of the rare trees in the park were planted by the eminent naturalist, Dr. Fothergill. The Maiden-hair tree, to which allusion is made, grew originally against the wall of the house (now destroyed), and extended to a considerable height above the roof, but the unsupported part of it was cut down some years ago, as it was thought to endanger the house. There used to be a very fine Cork tree in the garden, which was blown down about twenty years ago; and several magnificent Cedars, and a good specimen of the deciduous Cypress died in consequence (it was thought) of the level of the water in the soil being lowered by the new system of drainage, or other causes.

— DWELLERS in towns and cities, who are deterred from planting trees or shrubs in consequence of the prevalent notion that they will not thrive in cities, may be assured that it is quite erroneous. Proof exists in abundance, that many trees thrive in the smokiest parts of smoky London nearly or quite as well as anywhere else. There are many parts of the United Kingdom as free from smoke as could be desired, where you may look in vain for such stately and well-developed trees as we find in Brunswick, Mecklenburgh, and Berkeley Squares, in Lincoln's Inn Fields, or in many back gardens in London. In these and other London gardens there are many fine specimens not only of Planes, but of Ashes (weeping and otherwise), Thorns, Poplars, and, in fact, of most of the kinds of trees which lose their leaves in winter. Intending planters may, therefore, rest assured that not only one kind, or family, of trees will thrive in cities, but that many will do so. Smoky as our cities are, we may enjoy in them much of the glorious beauty of the deciduous trees of all northern countries. Evergreens we had better avoid until the smoke nuisance troubles us no more, if one may venture to speak of such a time.

— A MEETING of gardeners, nurserymen, and others, was held at South Kensington last Wednesday for the purpose of taking into consideration the state of the Royal Horticultural Society's affairs; but, although some little discussion took place, no result was arrived at. Another meeting of a similar character, convened by a circular issued by the Horticultural Club, also took place at Kensington Gore on the same day, under the presidency of Sir Daniel Cooper. This, like the previous one, ended without arriving at any useful result. No one seemed to know precisely for what he had come there; and, being apparently uninformed of the doings of the present council, and the exact financial condition of the society, all appeared like drowning men grappling at water-ripples, thinking them straws. A gentleman present earnestly recommended upholding the present council, but received no support. Mr. Wm. Bull advised waiting until the present council had been a twelvemonth in office, in order to get at the year's result, before any attempt should be made to uphold or refuse them support; and he considered these meetings quite premature. Mr. W. P. Ayres remarked that he thought it impossible to reconstruct the society on the old basis, and that he would be one of a hundred who would give £10 a year for ten years to start an entirely new and independent society. The chairman, after alluding to the way in which the society's books are kept, recom-

mended it to keep clear of a lawsuit, as it might by that proceeding spend a great deal of money without doing any good. He also questioned the legality of the present council, notwithstanding the statements made by the society to the contrary.

— M. GUIBERT's splendid collection of choice Orchids at Passy has recently been purchased by the Viceroy of Egypt. This collection was considered to be one of the finest in France.

— THE *Kent Herald* says that on Monday afternoon a Yew tree standing close to the ancient palace of Archbishop Craumer, and upwards of five hundred years old, was accidentally destroyed by some schoolboys, who had lighted a fire in its hollow trunk to warm themselves.

— At a late meeting of the Royal Horticultural Society, it was remarked by Mr. Jennings that *Vanda cœrulea* was fast disappearing from its native localities. At the present rate the ruthless removal of the plant must determine its extermination, at no distant date, in the Khasia hills.

— WE have received from Mr. Cocker, nurseryman, Aberdeen, some blooms of a bedding Violet named *Viola Queen Victoria*, gathered from the open border on the morning of Tuesday last. They are very beautiful, moderately large, of good form, and of a very dark bluish-purple colour, with a conspicuous yellow eye; such flowers from out-of-door Violets in December are quite a treasure.

— UNDER the title of the "*Botanischer Jahresbericht*," a new botanical publication is announced from Germany. The work is intended to be a yearly record of passing discoveries, facts, and other news of botanical interest, and will be conducted by Dr. Leopold Just, of Carlsruhe, on whose staff of contributors many eminent continental botanists have already enrolled themselves. The "*Botanischer Jahresbericht*" will be published once a year, in the autumn.

— THE Rev. M. J. Berkeley in addressing the meeting of the Royal Horticultural Society on Wednesday last, referred in terms of praise to the fine specimens of Pine-apples exhibited from Frogmore, where, he said, Pine culture is carried on in pits in which the plants were planted in a bed of loam, supported on a basis of Oak leaves, 6 feet in depth. These yield a gentle heat and never require renovating from the time the suckers are inserted till they have yielded fruit. Prompted by these remarks, one of the Fellows said, that neither at home nor abroad did he ever see this, the king of fruits, attain such size and perfection as in the Pitch Lakes of Trinidad, on the estates of the Earl of Dundonald. There the pitch in the dry season crumbles into a powder, and gets excessively hot, there being scarcely a drop of rain; nevertheless, the Pine-apples grow and flourish in it. The colour of the powdered pitch is reddish-black, consequently, it is a great absorber and retainer of heat, and anyone standing on it feels as if sinking, but by walking on without halting, this sensation ceases to be experienced; in fact, it is like walking on india-rubber. The same gentleman also stated that the fine black Pines of Antigua were grown entirely in decayed vegetable matter. In reference to the Pitch Lake Pines Mr. Murray, of Frogmore, informs us that nearly twenty years ago the Earl of Dundonald sent two large boxes of these Pine-apples to Windsor, and that they were, although fine, decidedly inferior to those grown in the Royal Gardens, and, indeed, to English grown Pines in general. The plants, too, were badly infested with scale.

— AN idea, founded on newspaper rumours, is prevalent amongst us that there is to be an Orange famine in England in consequence of the civil war in Spain. This is, however, not likely to happen, for the Orange trade never was in a more flourishing condition than at present. All the Spanish ports are open to free trade excepting two, of which Carthage is one, and although they should all be blockaded, an inland traffic would be carried on through Gibraltar, and thus our supply would be maintained. Should, however, Spanish Oranges be wholly withheld, that circumstance would affect our markets but little, for at present our chief importations come from St. Michael's, Palermo, and Messina, places which will yield us an unfailing supply until next June. Spanish Lemons are prized in our markets, but of these, too, the supply is quite equal to the demand, and they are largely imported from other sources besides Spain. The following account of Oranges and Lemons sold at the mart last Wednesday support these assertions:—Oranges: 980 flat boxes St. Michael's, 29 cases Valencia, 92 half-chests Lisbon, 113 cases Oporto, 571 boxes Palermo, and 772 boxes Messina; Lemons: 46 boxes Palermo, 739 cases Messina, 54 half-chests and 84 flat chests Malaga, and 119 cases Alexandria. At another sale, on the same day, were—Oranges: 298 flat boxes St. Michael's, 116 cases Valencia, 54 Villa Real, 1,330 half-chests Lisbon, 227 cases Oporto, 20 boxes Malta Mandarin, 5 boxes Palermo, and 143 boxes Messina; Lemons: 544 cases and 50 boxes Messina. These statistics of one day's sale show little sign of a probable Orange famine.

THE AMATEUR'S GARDEN.

HARDY CYCLAMENS.

I must premise, before saying a few words on hardy Cyclamens, that I am only a humble disciple of that able and experienced horticulturist, Mr. James Atkins, of Painswick. I shall never forget the pleasure of some hours' chat I had with him about his Cyclamens, and other pets. I grow *Cyclamen hederæfolium*, *C. h. album*, *C. h. Græcum* var. *lucidum*, *C. Coum*, *C. C. album*, *C. ibericum*, *C. vernal* of Sweet, *C. v. (true repandum)*, of Sibthorpe, *C. Atkinsii*. Some are planted in comfortable pockets at the bottom of a rock-work; and on a rock-work last year we had one pocket filled with *Cyclamen vernal*. The combination of beauty in the leaves, the flowers, and the brown roots as a background, was so perfect that many people said they ought to be painted; unfortunately, the weather was too cold at the time for the artist. We have one large bed in a well-sheltered rock corner, the soil of which is almost all peat. The plants are never disturbed, and seem quite happy. They are now just showing their pretty pink shoots above ground; I moved one bed this year, in summer, the time when they are most at rest, and put the bulbs into soil with some good mixed loam. The leaves are rather larger, but, otherwise, there seems little difference from the plants grown in peat. In hard frost, especially when the bloom is out, we sometimes put a bunch of Heather in front of the pocket, or a Fir branch over the bed, but I doubt even this being necessary. I believe that to follow Mr. Atkins' first injunction is all that is necessary for success. "The Cyclamens are all hardy, but like the foot-stalks of the leaves and flowers to be buried below the surface." I plant fully 3 inches deep; most of the Cyclamens seed freely; I let the ripened seed scatter itself over the bed, and then sprinkle a little bright soil over it.

GEORGE F. WILSON.

PLANTING LILIES.

Most of my Lilies are grown in pots in a large orchard-house, but some are planted out in open borders, and on root-work and rock-work. For those in pots we use a compost of two parts good fibrous peat to one part of loam, and if this be at all stiff, add half a part of sharp river sand. The bulbs are planted from 1 inch to 2 inches deep. We never let the bulbs get quite dry. When the plants have begun to grow, water is given more freely, and when blooming, they require, in the dry air of the orchard-house, very frequent watering. We believe in early potting, that is, directly the stem shows signs of fading, but, with care, some Lilies at least stand very late potting without injury. One year we had to delay potting some *L. speciosum* (*lancifolium*) till far on in March, when they had great long roots; the blooms from these were as early and as fine as from any of the autumn-potted ones. We consider September the best month for potting or planting out the early Lilies, and October for most other kinds. In September and October care should be taken to gently detach the stem-bulbs of all the species of Tiger Lilies. These will be found with long roots, and should be planted in deep seed-pans at once. We find Lilies in the orchard-house grow best in large pots, and they are less apt to suffer from a chance neglect of watering. As many Lilies throw long roots downwards, we find narrow deep pots useful. Our best blooms out of doors this season have been from a large clump of *L. auratum* planted at the top of the root-work with a north aspect, in deep peat, with a little loam mixed.

Heatherbank, Weybridge Heath.

G. F. W.

FALLING LEAVES.

MANY think that when the leaves turn red and yellow in autumn it is because they have been killed by the frost. But a little observation will show that such is not the case, and that the autumns when the leaves are most beautiful are those in which the frost is the latest. A severe frost kills the leaves at once, and they soon fall, brown and withered. To be brilliant they must ripen naturally. Leaves fall (says the *Boston Journal of Chemistry*) because they are ripe and have performed the service that was allotted them. The leaf is the laboratory of the plant, and in it are performed most of the operations essential to its growth. It takes the crude materials gathered by the roots, refines them, rejecting all that is not essential, and out of the remainder constructs the highly complex bodies that are found in other parts of the plant. These rejected parts consist mainly of earthy matter that was in solution in the water taken up by the roots, and it is deposited in the cells of the leaf. This is

shown by the fact that the leaf contains far more ash than any other part of the plant. In some plants the ash of the leaf amounts to over 20 per cent., while that of the wood rarely exceeds two or three. When the cells become completely clogged up with this matter, the leaf can no longer perform its functions, and so ripens and falls off. Provision has already been made for this separation. If the foot-stalks of most leaves be examined, it will be found that a kind of joint exists near the body of the plant, even when the leaf is quite young; as it grows older this joint becomes more marked, and finally when it is ripe a gentle breeze will shake it off, and no wound is left, nothing but the scar; the wound has healed even before it was made. The same is also true of fruits; a joint may generally be found in the stem, at which it separates readily. This is very marked in the Grape; it is situated at a little swelling that is to be found on the stem. A slight bend will separate the stem at this point, while it takes a strong pull to sever it above or below. Even on the ever-green trees, which apparently never shed their leaves, the leaves exist at the most but two or three years, when they are replaced by new ones, the old falling away as they become unfit for active duty; but the leaves in this case being shed mostly in the spring, we do not miss them.

Thermometers.—I have three of Negretti and Zambra's self-registering minim thermometers; the red colouring matter with which the spirit is coloured has all receded into the bulbs, and left nothing but a pure white liquid which it is almost impossible to see at night time; although placed at a good angle, it seems not to have strength to drag the needle down with it. Invariably in the morning I find it sticking half in the spirit and half in the empty tube of the thermometer; what is the cause of this?—W. C., *Whitehaven*. [Messrs. Negretti & Zambra state that the thermometers are filled with alcohol coloured with a vegetable material; and, if exposed to great light or sunshine, that portion which is in the thermometer stem will sometimes become bleached, and, in the process, deposit a substance which, if it surrounds the index, will prevent its moving freely in the tube. To adjust a thermometer which is in the state here represented, proceed as follows:—Hold the thermometer in the hand, bulb uppermost, and swing it violently backwards and forwards until the fluid in the ball (which possibly is not bleached) fills the stem entirely; then reverse the action, and swing the thermometer bulb downwards. This will have the effect of mixing the two portions of fluid, so that the bleached portion will be again coloured, and, if not thoroughly so, repeat the operation. Lastly, stand or hang up the thermometer for an hour, so that any particles of the alcohol hanging about the tube may be drained into the main column. The index will now flow freely in the tube if the experiment has been carefully performed, and no air-bubbles left in the tube.]

Esparto Grass.—Can you kindly favour me with some information concerning the cultivation of Esparto, used in the manufacture of paper? Or, could you inform me where such information can be obtained? I am a colonist, on a visit to England, and have been impressed with the idea, from the chance observations I have heard, that its cultivation might be advantageously introduced into Australia.—G. F. T. [We have no doubt that the Esparto Grass could be successfully cultivated in the warmer parts of Australia, as it grows freely in the Mediterranean region of Europe, and most abundantly in some parts of Northern Africa. In Algeria, it is grown to a very great extent, and we believe our chief supply of it comes from that quarter. As to its cultivation, it appears to be very simple, the seed being sown just like that of other Grasses, after which, the only labour is that of cutting the Grass when ripe. M. Rivière states that it does best on an alluvial soil with a clay sub-soil, but it will grow in almost any kind of ground. There are two species of Grasses known under the commercial name of "Esparto," viz., *Stipa* (or *Macrochloa*) *tenacissima*, and *Lygeum spartum*. The former, which affords by far the most abundant and best-fibre, is the *Alfa* of the Arabs. The latter is the *Sparto* of the Spaniards. We should say that you would find no more difficulty in growing either of these Grasses in the warmer parts of Australia than you would experience in growing the ordinary Grasses of the district.]

WE hear from America of a modern philosopher's plan, by means of which every man can be his own weather prophet. "If you wish to know whether it is going to storm or not, all you have to do is to find the storm vortex and see which side of it is the most moist. Multiply this by the square of the latent heat, subtract the time of day, and divide by the weathercock. The result will be the rarification, plus the thermometric evolution of the north pole, and then a wayfaring man, though a natural know-nothing, can tell what will follow." How wonderful, and yet how simple, is the economy of nature.

THE FLOWER GARDEN.

THE HARDY DRACÆNA.

NEARLY all the Dracænas or Dragon-trees at present in cultivation are generally treated as tender tropical plants requiring considerable artificial heat in order to grow them successfully. Recent experience has, however, convinced many plant-growers that they will luxuriate in a much cooler temperature than has been supposed, and during the past two or three years we have seen them grow freely in the London parks, planted out in ordinary soil, and treated as sub-tropical plants. The species we now illustrate is very hardy in constitution, and is not only valuable for cool conservatory and sub-tropical decoration, but is also perfectly hardy when planted out in Devonshire, Cornwall, and other southern counties, and it has also withstood the last few winters on warm dry soil in many parts of Ireland. A fine plant of it has stood in front of the gardener's cottage at Killerton, in Devon, for several years, and several other specimens we could mention have been actually cut down level with the ground by severe frosts, but have again pushed forth strong suckers, and have made fine plants in a year or two's time. A good strong plant of this Dracæna is always an effective object when planted out in sheltered positions on lawns during the hottest months of the year, and plants of it so treated are fitted to withstand a much lower winter temperature than when they are grown in a heated structure. Like its congeners, it is readily propagated by means of cuttings of the stem, and for pot culture we recommend a compost of fresh fibrous or turfy loam, peat, and sand, the two former in nearly equal proportions, and the plants should be well rooted and established before they are planted out. In Hampshire this plant has been known to endure 16° of frost, and if the dead leaves are allowed to remain around the stem, *i.e.*, allowing Nature to protect herself, it will stand even more cold than that. It may be mentioned that the practice of pulling off the decayed leaves of this and similar plants is often the cause of their death.

B.

HARDY BULBOUS PLANTS.

I ENUMERATED (see p. 413) some of the most valuable spring-flowering bulbs with which our gardens should be enriched. Let me now direct attention to a few others, equally well worth cultivation, commencing with the genus *Allium*. This, as is well-known, contains several species highly valued as esculents, but at the same time it also contains various other kinds that are highly prized for decorative purposes, inasmuch as their flowers are very showy and are produced in abundance, and they also thrive in ordinary garden soils. One of the most desirable of these, both for borders and rock-work, is *A. azureum*,

a plant which grows about 18 inches high, and which has beautiful bright blue flowers borne in a dense umbel that is usually in perfection about the end of June. *A. fragrans* grows about the same height as *A. azureum* and has white flowers which emit a somewhat vanilla-like odour. It should be planted in borders or naturalised. The only species of the genus that receives anything like general attention as a border plant is *Allium Moly* which grows from 10 to 15 inches high and which produces showy umbels of bright yellow flowers in May or June. Tufts of this species are very attractive when seen in full flower in a border. It is also worthy of a spot on rock-work, or it may be used as an edging, or naturalised on bare banks among other hardy bulbs. *A. neapolitanum*, sometimes known as *narcissiflorum*, is another handsome species with white flowers, somewhat resembling those of a *Narcissus*. It is suitable either for borders or rock-work. The rose-coloured *Allium*

(*A. roseum*) is a pretty kind which grows from 12 to 18 inches high, and is very suitable for borders or for naturalisation. The curious *A. paradoxum* which has pure white flowers, and *A. triquetrum*, which has also white flowers striped with green, are likewise attractive kinds. The genus *Alstroemeria* contains several highly ornamental species, but the majority of them are somewhat tender, or only thrive in a particular soil, therefore I will only recommend for general uses *A. aurea*, a plant which I have observed luxuriating in ordinary soils in various localities. It is a plant that grows from 2 to 4 feet high, and produces, about July, large umbels of pretty yellow flowers streaked with red. It makes an attractive border plant, and is highly effective when naturalised in shrubberies. *Anthericum* is another valuable genus, the species of which produce handsome spikes of flowers in abundance. The best kinds are *A. Hookeri*, a native of New Zealand, that grows from a foot to 18 inches in height, and has bright yellow blooms, and *A. Liliastrum*, which grows about the



Dracæna indivisa.

same height and has pure white funnel-shaped flowers. Both of these are attractive border plants, and are also worthy of a position on rock-work. The latter is often named *Czackia Liliastrum*, and sometimes *Paradisica Liliastrum*, while the former is commonly known as *Chrysobactron Hookeri*. Several of the *Arums* are hardy, and, owing to their large and peculiar spathes and their handsome foliage, form highly effective border or rock plants. One of the most remarkable of these is *Arum crinitum*, a plant that grows from 12 to 18 inches high, and has large dull purple spathes, which emit a very offensive odour. Being a native of the south of Europe it does not succeed in many parts of this country unless planted in a warm and somewhat sheltered position. *A. Dracunculus* is a more vigorous grower than the preceding, often attaining a height of nearly 3 feet. The spathes of this are smaller than those of *A. crinitum*. *A. italicum* is the kind most frequently met with. It is a dwarf-growing plant about a foot high, with dark green

shining leaves, strikingly variegated with white. The *Asphodelus* (*luteus* and *ramosus*) are highly ornamental plants of graceful aspect, capable of enriching a flower or shrubby border. These plants grow from 3 to 5 feet high, and the flowers are produced in long dense spikes in July and August. The flowers of the former species are yellow, those of the latter white, with a brownish line down the middle of each division. The *Brodiaeas* are a very showy class of hardy bulbs that are by no means commonly grown. Of this genus I am acquainted with three species that are highly ornamental flowering plants, worthy of a position in the best collection, viz., *coccinea*, *congesta*, and *grandiflora*. The first of these is of recent introduction, and has handsome flowers of a rich magenta colour, borne in umbels of from sixty to twenty flowers on a stem from 18 inches to 2 feet in height. Till more plentiful, this kind should have a favourable position on rock-work or borders in deep sandy loam. *B. congesta* is the most common of any of the species in cultivation. Though rather straggling in habit, this forms a handsome plant when in flower, its fine blue flowers being freely produced in close heads. It grows freely in any soil, and is suitable either for borders or for naturalisation. *B. grandiflora*, an old but not at all common species, is a very attractive bulb, that grows from 6 to 12 inches high, and has 6 or 8 bluish-purple blooms in a loose umbel, which appears in May or June. It is worthy of a position either on rock-work or on borders, and it thrives in ordinary soil. The North American *Camassia esculenta*, a near ally of the Squills, is another very effective hardy bulb when seen in tufts in a border. It grows from one to two and a half feet high, and thrives in any soil or situation. The flowers of this plant are of a dull blue colour, and are borne in a loose spike about the month of June.

Colchicums.

The genus *Colchicum* is one which is beginning to occupy a prominent position in many of our leading gardens for decorative purposes in autumn, and it is one that is destined to be much more popular than it is at present when the merits of its respective members shall have become better known to gardeners. All of them make attractive objects in the mixed border; they are also valuable for edgings to beds or shrubberies, or for dotting beneath standard trees and shrubs. The flowers of these plants are produced in great profusion during the months of September and October, or even November, and I know of no more pleasing sight during these months than is afforded by a collection of these bulbs when in full bloom. The following deserve extensive cultivation, viz., *autumnale*, bright rosy purple, and its varieties; *a. album*, both single and double; *a. plenum*, double, purple; and *a. striatum*, striped with white; *C. byzantinum*, pale rose; *C. chionense*, rosy-lilac, beautifully chequered with white; *C. crociflorum*, of a beautiful reddish-purple when first expanded, changing to paler when fading; *C. speciosum*, with flowers of the same colour as *byzantinum*, but twice the size; and *C. variegatum*, which has rose-coloured flowers prettily chequered.

Commelina cœlestis, a native of Mexico, is sufficiently hardy to withstand the winter in the warmer parts of the British Isles. It is a plant that grows from eighteen inches to two feet in height, and produces throughout the summer months conspicuous blue flowers. There is a good white-flowered variety, worthy of a position in the mixed border in good sandy loam. The merits of the Lily of the Valley (*Convallaria majalis*) are sufficiently known without alluding to them here, but *C. bifolia*, a little British ally, is sufficiently ornamental to deserve a few commendatory words. It is a plant which forms a neat tuft from six to eight inches high, and produces showy racemes of little white flowers in summer, which, if backed by one of its heart-shaped leaves, make a pretty little "button-hole" bouquet. It grows freely in any soil, and is worthy of a position either in a border or on rock-work. A beautiful plant, very seldom met with cultivated as a hardy bulb, is *Crinum capense albiflorum*. A specimen of this has stood out of doors in the Royal Botanic Gardens, Regent's Park, for a number of years in a soil and position by no means favourable for bulbous plants, where it annually produces a good show of its large funnel-shaped fragrant white blooms. It grows from two to three feet high, and forms a fitting companion to such plants as *Hemerocallis fulva*, the white and other Lilies, in

deep sandy loam. There are several species of *Cyclobothra* in cultivation, but these do not succeed sufficiently well in this country, except under the most favourable circumstances, for me to recommend them for general use.

Autumn Crocuses.

The genus *Crocus* affords us some highly valuable autumn and winter-flowering species which deserve to be as universally cultivated as those species which bloom in spring. These plants are fitting associates to the *Colchicums*, and, like them, are suitable for various positions in our gardens. I have recently (the last week in November) observed several of the kinds mentioned below blooming in great perfection in Mr. Barr's garden, some of which had been flowering for some two months, and promised to continue in that condition for some weeks. The following kinds are in cultivation and may be obtained of most nurserymen who grow collections of hardy plants, viz., *C. byzantinus*, a pretty and distinct kind, with flowers of a lilac-purple hue, produced in October and November; *C. nudiflorus*, known also under the name of *multifidus*, bright purple, flowers in September and October; *C. longiflorus*, pale lilac, the pistils being of a deep orange-red, and the anthers a bright orange-yellow; *C. sativus*, the true saffron *Crocus*, which has lilac-coloured flowers prettily marked with purple at the base; *C. serotinus*, which has compact blooms of a clear lilac inside, the outer divisions being paler coloured and striped; and *C. speciosus*, the last, probably the handsomest and largest flowered kind of all that bloom in autumn. Its flowers are of a bluish-violet colour, the inside being striped with deep purple. The various species and varieties of the genus *Funkia* are among the most useful of hardy perennials. They possess the combined property of being handsome-flowering plants, and also ornamental in foliage, and, as a rule, they thrive in ordinary garden soils. Closely allied to the *Funkias* are the Day Lilies (*Hemerocallis*), several kinds of which are free and handsome flowering plants, worthy of a position either in mixed or shrubby borders, or for naturalisation. A very desirable hardy bulb, by no means often met with in gardens, though several of our nurserymen have a good stock of it, is *Hyacinthus amethystinus*, a pretty little plant that grows from 4 to 10 inches high, and produces in early summer very showy blue flowers, borne in a somewhat one-sided spike or cluster. This plant is worthy of a spot on rock-work, or on the choicest border, and it thrives best in deep sandy loam, though I have known it to succeed in stiff soils.

Different Varieties of Iris.

The various kinds of *Iris*, for beauty of colour and quaintness of outline, rival even tropical Orchids themselves. Of this genus there are numerous forms of such species as *I. germanica*, *Xiphium*, and *Xiphoides*, which are commonly cultivated. To these, therefore, it is unnecessary to further allude, but as there are numerous distinct and valuable species, all capable of adding increased grace and beauty to a garden, I will briefly advert to one or two that are seldom met with, except in full collections of such plants, or in botanic gardens. Foremost among these stands the curious and pretty *Iris iberica*, introduced a few years since by Mr. Ware, of Tottenham, a plant that grows from 4 to 18 inches in height, and that has very large flowers, the outer divisions of which are of a dull red and marked with greyish lines, the inner ones being pale purple and marked with deeper-coloured lines. Being at present very rare, it should have a sheltered position on rock-work or be planted on a warm border in good sandy loam. Next in order to this is a species which much resembles it in appearance, viz., *I. susiana*; this, though cultivated in gardens when Parkinson wrote his "*Paradisus Terrestris*," a work in which it is capitally described and figured, is nevertheless still a rare plant. It grows from 18 inches to two and a half feet in height, and produces in May or June, grey flowers densely spotted with dark purple. It is a native of Asia Minor and Persia, and is worthy of association with *I. iberica*. *Iris ochroleuca*, one of the latest-flowering species, is a very distinct kind that grows about 4 feet high, and produces in July large and handsome white flowers with the divisions prettily blotched with yellow. It is worthy of a position in borders among vigorous-growing plants, or in shrubberies. *I. Guldenstædtiana*, a kind which I noticed at Kew during the past summer, somewhat resembles *I. ochroleuca*, but its flowers are smaller and the

divisions are marked with blue. The crested Iris (*I. cristata*) is an exceedingly pretty dwarf species, with rhizomes creeping on the surface of the soil, and sky blue flowers with deeper spots and stripes of orange. This is a capital plant for rock-work or for the margin of mixed borders in rich sandy loam. It flowers in May. Commoner than either of the preceding, are such sorts as *graminea*, which grows about a foot high, and has flowers of a pale purplish-violet striped with blue; *I. pallida*, probably the freest and handsomest flowering kind in cultivation, with large pale blue flowers; *I. Swertii*, white veined with violet; and *I. spuria*, bright blue with deeper coloured veins, all of which form highly attractive border plants and thrive in ordinary soils.

Lilies.

The genus *Lilium* contains several members that are held in universal esteem, from the common old-fashioned white Lily (*L. candidum*) to the recently-introduced and handsome golden-rayed *Lilium auratum*. There are a great many species and varieties of these bulbs in cultivation, which are capable of beautifying, in various ways, many parts of a garden; for instance, they may be dotted about thinly among beds of *Rhododendrons*, the peaty soil in which forms a medium in which most Lilies luxuriate; or they may be planted in the shrubbery, or mixed border, or in beds. The species enumerated below are all distinct and handsome, and will be found worthy of a position in any garden, viz:—*L. auratum*, a kind which has withstood several winters in various parts of the United Kingdom, and which may be looked upon as quite hardy. It grows from 2 to 5 feet high, and has large richly-scented white flowers, ornamented with bands of yellow, and crimson spots at the base of the petals. *L. canadense*, from 2 to 3 feet high, has pretty orange-yellow flowers, deeply spotted with purple. *L. candidum*, the common white Lily, is one of the most useful of all, and has blooms of the purest white. There is a variegated-leaved variety, which is a very effective plant in beds or borders during the winter months. Another very useful plant is the scarlet Martagon (*L. chalcedonicum*), which grows from 2 to 4 feet high, and has brilliant scarlet-coloured flowers. *L. croceum*, the orange Lily, grows about 3 feet high, and has light orange-coloured flowers, with numerous dark spots. *L. longiflorum*, is a very handsome species, about 18 inches high, with funnel-shaped pure white blooms. The Martagon Lily (*L. Martagon*), and its varieties, form attractive plants in the earlier summer months. The well-known *L. speciosum*, commonly known as *lancifolium*, makes a capital border plant producing handsome flowers about the month of August. The Tiger Lily (*L. tigrinum*) is one of the best known of all Lilies; it produces its orange-scarlet blooms in July or August. Of *Lilium venustum* there are a great many varieties, all of which are valuable for rock-work, borders, or for planting among dwarf shrubs. *Lilium testaceum*, sometimes called *excelsum*, is a desirable vigorous-growing species, with flowers of a bright buff colour.

Miscellaneous Bulbs.

Merendera Bulbocodium has flowers which are of a delicate pinkish-lilac colour, and are produced in October. Suitable for association with the *Colchicums* or autumn-flowering *Crocuses* in various positions, and succeeds best in deep sandy loam. The Feathered Hyacinth (*Muscari comosum*), and its varieties, grow from 12 to 18 inches in height, and produce in May and June large plume-like clusters of purplish-violet flowers. The variety known as *monstrosum* is larger and its flowers are more feathery than in the common form. Parkinson, writing in 1629, mentions a white-flowered variety, but I have not seen this in cultivation. This *Muscari* is useful for borders or for fringes of shrubberies, and it thrives in ordinary garden soils. Several of the *Ornithogalums* are very attractive when in flower, the most useful being *pyramidale* and *umbellatum*. Their flowers are white, those of the former species being produced in a pyramidal cluster, while those of *umbellatum* are, as its name denotes, produced in an umbel. These plants thrive in almost any soil, and are suitable for borders or naturalisation in various positions. The genus *Pancratium*, some of the species of which are among the most beautiful of stove bulbs, contributes *P. maritimum*, which is hardy enough to withstand the winter in various parts of the country.

I met with a good tuft of it about four years ago in a border at Chiswick, which appeared to have stood in that position for some years. It grows from ten to twenty inches in height, and produces in early summer numerous handsome fragrant white blooms. It should be planted in a sunny spot on borders in deep sandy loam, the bulbs being planted about six inches deep. Several species and varieties of *Sparaxis* are grown as half-hardy bulbs, but *S. pulcherrima* is a thoroughly hardy species, and quite distinct from the commonly known Cape kinds. It grows from 3 to 5 feet high, and produces late in summer showy bell-shaped rose-coloured flowers, borne in a loose panicle. This plant is suitable for sheltered positions in borders, or for planting in shrubberies in deep sandy loam. *Schizostylis coccinea*, a plant which much resembles a *Gladiolus*, is a very beautiful hardy plant from two to three feet in height, with bright crimson flowers borne in a one-sided spike. It flowers for a long time in succession, and is suitable for borders, or for association with other hardy bulbs in good sandy loam.

A useful associate for autumn-flowering bulbs is the yellow-flowering *Sternbergia lutea*, which is supposed to be the "Lily of the Field." It grows about 6 inches high and produces somewhat cup-shaped flowers from September till November. Tufts of it are very effective in borders, and it is worthy of a position on rock-work. Besides the well-known spring-flowering *T. uniflora*, the genus *Triteleia* affords us a summer-flowering species in *T. laxa*, which is a handsome bulbous plant, reminding one at first sight of the African Lily, and which is worthy of a position in the choicest collection either in the border or on rock-work. It grows from 8 to 12 inches high, and its flowers are of a deep purplish-blue, and are borne in umbels in June or July. The Flame-flower (*Tritoma Uvaria*), and its varieties, need scarcely be mentioned by me, as it is a plant which is pretty generally cultivated, but I may mention that beds of them may be made highly effective by dotting among them bulbs of the common white or other hardy Lilies, the long green leaves of the *Tritomas* forming a good ground for the brilliant colours of the lilies. The genus *Zephyranthes*, the species of which are also known as *Amaryllises*, contributes a dwarf-growing kind in *Z. Atamasco*, which, though somewhat tender, thrives sufficiently well in many parts to be quite worthy of notice in this paper. It grows from 6 to 12 inches high, and produces in summer a profusion of pretty white flowers. It should have a sunny spot in borders or on rock-work, in well-drained sandy loam. In the above list of bulbous plants will be found an assortment of those in cultivation most worthy of a position in gardens. In this paper are included several genera which, though belonging to the *Monocotyledonous* class of plants, have not, like their brethren, bulbous roots, but as they are usually found in catalogues of hardy bulbs I have made mention of them here.

T. SPANSWICK.

A SPRING FLOWER BORDER.

As this is about the best time of the year for the planting and arranging of beds and borders calculated to make a pretty and effective display of colour during the coming spring, it has occurred to me that a detailed account of the arrangement and filling of a small and choice spring border which I have recently planted, may be interesting to some of your readers who may be fond of spring bedding, and who could easily carry out the same plan for themselves, more or less effectively, without necessarily using all or any of the same things I have used, and which it may not be convenient for them to obtain. I may add that the border is in front of a conservatory, and that the circles which it contains are altogether ten in number, and that the length of the border is 28 feet, by 4 feet broad. At the back of the border is a line of seedling plants of the lovely *Myosotis dissitiflora*, which reproduces itself by self-sown seed in the greatest profusion wherever it is planted, and resembles, when in flower, a broad band of turquoises. In front of the border is a line of double red and yellow Van Tholl Tulips, of which there is also a row in each of the circles, and single plants of the same at the exterior tangential angles of the circles. In front of all are two rows of mixed *Crocus* planted thickly. The circles are margined with fifteen to seventeen plants of Dixon's fine crimson quilled double Daisy to the total number of 160 plants. The centre clumps

of each circle are what I hope will prove the most interesting part of the whole border when the blooming time comes round, as they are composed each of half a dozen plants of the finest and most distinct varieties of double Daisies, which I have been able to obtain either from nurserymen or through the kindness of my friends. These I shall now proceed to enumerate and briefly describe:—1. *Bellis Ranunculiflora*, fine large, white, very double. 2. *Grandiflora bicolor*, very large flower with white petals alternated with red. 3. *Roseo-tincta*, a pretty medium-sized flower, of a beautiful blush colour, every petal tipped with rose. 4. Flower of Spring (Henderson), a beautifully mottled and gold-veined leaf, with large double white flowers; a sport from *Aucubæfolia*, but possessing a finer and more distinct variegation, and a much more vigorous habit. 5. *Aucubæfolia*, gold-variegated leaf, with double red flower. 6. Snowball (Henderson), fine large fully double white, very early. 7. Crimson King, fine bright red Daisy, of large size. 8. Little Dandy, small pink quilled button, very pretty. 9. White Queen, large double white Daisy. 10. Hen and Chickens Daisy, blush pink, with small flowers of a paler colour, cropping up round the main flower. Of all the above mentioned eleven varieties (ten kinds are in clumps, the eleventh composing the circles), as far as I can yet judge, No. 6 (Henderson's Snowball) is much the earliest to come into bloom, as some plants of it in another bed have now (November 20th) some nice fully-developed blooms on them. It is also of extremely free habit of growth, half a dozen plants obtained from Messrs. E. G. Henderson & Son about a year ago having produced twenty-seven good plants in that time. I may add that I am also growing eighteen new varieties of double Daisy, raised and sent out by Mr. B. W. Knight, of Battle, Sussex, under the name of the Victoria Daisies, and said by him to produce flowers 6 inches in circumference, resembling *Ranunculus* blooms, on foot-stalks 8 inches high. Of these I hope to send you some good account when they bloom.

W. E. G.

Belgrove, Queenstown, County Cork.

THE GRAPHIC ON FLOWER GARDENING.

"You may see as good sights many times in tarts," says Lord Bacon in his "Essay on Gardens," speaking of "the making of knots or figures with divers colours." His grand point is what he calls "the royal ordering of gardens," that there be blooms for all the months of the year—to wit, the things of beauty which may be then in season. And that is the one point in which we fail. Our parks have lately been aglow with "blooms," of which Bacon knew nothing. Battersea Park is a marvel of "bedding-out." Why, by the way, should St. James's be so fearfully dingy, with nothing brighter than a few Tree Mallows and sickly Marigolds? But to this three months' blaze of colour we sacrifice almost all the rest of the year. Why not try more spring and early summer flowers, things that will bear our late frosts? Even Bacon could find blossoms for every month; he gives a list "whereby you may have the Golden Age again, and a spring all the year long." We are unsuspectingly rich in materials for outdoor Bacon. Why then should parks, and still more small suburban gardens, be doleful places, showing little else than bare brown earth between Crocus time and bedding-out time? The reason is that we, whether individuals or boards, dread trouble, and leave things to gardeners, who make one garden as like another and one park-border as like another, as Mrs. A's dinner is like Mrs. B's. Nothing is easier than growing Geraniums and Fuchsias. Look at them in Devon, they will cover a house for you while you are waiting for a coy Clematis or Jessamine to merely "establish itself." And then they bear shifting and putting away in the cellar till next year. You can't disturb a bed of Anemones or Gentians, or Lilies of the Valley, or the Wallflowers that Bacon is so fond of, without "throwing them back," if not killing them outright. Therefore, as these spring and summer flowers grow ragged and weedy in the autumn, you elect to have bare earth until your gay-coloured foreigners can be safely planted out. Hence it comes that Pæonies and Columbines and Larkspur and "Monkshoods in all colours," and too many more of Bacon's favourites, are almost confined to old-fashioned gardens like the Lady Corisande's in "Lothair." The routine gardener loves them not; they put him out of his course; he can do anything in the way of "knots and figures with divers colours," but he won't understand that a yearlong succession of flowers and flowering shrubs is possible if you'll take a little pains about it. And so the irrepressible Geranium and the Coleus, and a few more have it all their own way, revenging themselves on us for our doings in the Antipodes. The Maori man is going; so is the Maori fly; and they say our

Grasses will drive out the native Grass. But over here it is just the reverse; these succulent things that you can scarcely kill with any clumsiness in potting or planting out, these late bloomers which remind us that spring on their side of the world is only beginning now, have actually "improved off" a good many of our old garden plants. It is worth while to go back to Bacon. See how he talks of the Cornelian tree (wild Cherry); why not have half-a-dozen of them in every London park-clump? If those who order these things had ever seen a Yorkshire "Beck" in April they would not leave us long without a tree which is as good in its way as the Almond. "Oh, but they won't grow." Anything will grow in London if you give it proper earth; and in these railroad days a load of peat is as come-at-able as a load of gravel; besides, you can burn what is left of it. We are by no means unthankful for what we've got—for parks that drive the foreigner to despair, and for window gardens that are a wonder to those who remember London streets a dozen years ago. But because we have done so well is the very reason for doing more. Those who have seen a Chrysanthemum show in the once dreary Temple Gardens, ought to look forward to the time when there will be "a spring all the year long" in our parks, and when the miles of little gardens along the Clapham Road and a hundred other roads will show something less dingy than heavy iron railings and perpetual Privet hedge. Bacon would grow fruit trees among his shrubs, "setting fine flowers round them, but thin and sparingly, lest they deceive the trees (rob them of their nourishment)." Half his list is made up of Damson and Plum in blossom, Plums, Peaches, warden in fruit." Why not? The same watching which protects your flowers from the pilferer would protect your fruit. And, consider the profit.

Double Flowers producing Seed.—The question which was put in one of the recent numbers of THE GARDEN about the seed of double flowers, induces me to make the following remarks:—A double flower, in which all the stamens are changed into petals, cannot produce seed, as is very truly said there; also, if some double flowers seed it is because some of the stamens did not change into leaves. But the inquiry was about such double flowers as Asters and Dahlias, which belong to the family of the so-called compositæ, in which, generally, no alteration of the stamens is caused by the doubleness of the flowers, and, properly speaking, they are not double at all. If we pull out one of the petals from the inner part of the flower we perceive that it is a flower in itself, with stamens and pistil, the petal of which has grown to nearly the same perfection as on the outer circle; the flower is then called double. Consequently, double flowers of Asters, Dahlias, and all which belong to the compositæ produce seed almost as freely as the single ones of the same kind. If they do not sometimes, it is because the petals have grown too large, and thus hinder the air from coming to the stamens and pistils. This is the case, in wet weather especially, and so prevents the fructification.—G. UHINK, Ealing.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

New Aquilegia.—The "Botanical Magazine" for this month contains a finely-executed coloured plate of *Aquilegia leptoceras*, var. *chrysantha*, recently introduced by Messrs. Backhouse and Sons, of York, from the western regions of North America. Dr. Hooker considers it a variety of *A. leptoceras*, in opposition to Professor Asa Gray, who has described it as a distinct species under the name of *A. chrysantha*.

The Winter Cherry (Physalis Alkekengi) in Battersea Park.—The scarlet fruit of this hardy perennial are at this season particularly striking. Although it cannot by any means be called an ornamental border perennial as far as its flowers are concerned, yet for naturalisation in shrubberies or on bare banks it is invaluable, as it forms a good covering for such places during the summer months, and in autumn it cheers us with a profusion of bright scarlet fruit half concealed in singular-looking envelopes. A shrubbery in Battersea Park, with a quantity of this plant used as a sort of carpet, has been gay for several weeks past.

New Heat-Resisting Lawn Plant.—M. Linden states that during a recent visit to the North of Italy, at a time when, from the scorching heat of summer, the Grass fields were burned as brown as hay, he was much surprised by the sight of a fresh green sward in the gardens of Count Papadopoli, at Venice. On examination, he found that the ground was carpeted, not with Grass, but with thickly-set plants of *Convallaria japonica*, which maintained their deep and beautiful green colour, under the fiercest heat of the dog-days. [The plant here referred to as *Convallaria japonica* is better known in English gardens under the name of *Ophiopogon japonicus*. We have seen it used as a carpeting-plant in the gardens of Count Borromeo, on Lago Maggiore. It is, of course, much more valuable for this purpose in warm climates than with us in England.]

Hebeclinium nrolepis.—In regard to this somewhat pretty herbaceous plant, it may be observed, first—That the involucre scales of this end in a pale purple coloured tip, and are so arranged around the deeper purple disk as to simulate a ray. Under the lens they are seen to be prettily fringed. Second—That the lively yellow tint of the more advanced capitules is due, not to the stamens, but to the stigmatic branches, which have brushed out the pollen and carried it up, to furnish a pretty contrast. After a few days the yellow colour fades out and reveals the stigmas in their natural tint, viz., white faintly tinged with purple. It is, indeed, altogether a curious and interesting plant, and one which lasts long in bloom, but somewhat coarse in habit compared with *Aceratum*, to which it is closely related. It grows 4 to 5 feet high in ordinary soil.—W. THOMPSON, Ipswich.

THE FRUIT GARDEN.

BARRELLING APPLES.

VISITORS to Covent Garden cannot fail to have noticed that the Newtown Pippins and other Apples imported from America reach this country in a remarkably perfect condition. This is owing to the fact that they have been so carefully packed in the barrels, that no amount of rough usage, with which they may meet during their journey, can possibly shake



Barrel Press.

them loose to bruise each other. For this purpose various kinds of presses are employed, worked by levers or by screws. A new contrivance of this kind has lately appeared, which combines effectiveness and simplicity to such a degree that we are induced to quote the following article on the subject from the *American Agriculturist* :—

Whenever we have had anything to say about barrelling fruit, we



The Press in use.

have insisted upon the importance of so packing it that it cannot move and become bruised in transportation. When fruit is barrellled, the barrel should be so filled that a moderate pressure will be required to bring the head into its place. A few of the Apples, &c., next the head may be slightly flattened upon one side, but the rest of the contents will be kept from injury. The necessary pressure is applied in various ways. The simplest is to use a joist or other stick

of timber for a lever. One end of this is placed in a notch in a post, or under a cleat nailed to a post or an old tree, as a fulcrum. The barrel is placed under the lever near the fulcrum, and power applied by a man pressing on the opposite end of the lever. Some blocks of wood will be needed for followers to place between the head of the barrel and the lever. A press of this kind will answer every purpose, but it is clumsy and unhandy. Several portable presses or clamps have been invented and patented, consisting essentially of a platform on which to stand the barrel; to this are fixed two upright iron rods, which are attached above to a cross-piece, in the centre of which is a screw; the barrel being placed under the screw with the necessary followers, a few turns bring the head into place. A still more simple press is shown in the engravings. There are two iron rods, one end of each of which is turned to form a claw to catch under the bottom of the barrel. The other ends of these rods are fastened to the ends of a bar that is bent at right angles, which we may call the handle of the affair. There is a strong cross-head which has a short rod at each end. The lower ends of these rods are also attached to the handle but a few inches distant from the ends where the other rods are attached. The working of the press will be readily understood from the engravings; the claws catch under the lower edge of the barrel, and the cross-piece, with a follower, goes across the head of the barrel; when it is put on, the handle is upright, as shown in figure 1. It will be seen that by bringing down the handle a powerful leverage is exerted, the rods, which are caught by their claws under the bottom of the barrel, acting as fulcrums. The operator regulates the pressure by his foot, while the hands are free to fasten in the head, as shown in figure 2. This press has the advantage of being light, all in one piece, and doing its work with a single motion.

PRUNING BUSH FRUIT.

EXCEPT where small birds are numerous and destructive, this is the best month for pruning fruit bushes of all kinds; and when this work can be performed early, it enables us to get the necessary cleaning, manuring, and forking of the fruit borders done, so as to impart a neat and tidy appearance to the garden. However, what I more especially wish to point out to young cultivators is—there should be a difference in the treatment (so far, at least, as regards pruning) between light soils and strong tenacious loams. I have known disappointment to ensue from applying the same rules in pruning (Gooseberries especially) on strong soils that had proved satisfactory on light warm soils. On the latter, bushes may be pruned in freely, and even spurred closely, and still a good crop of fruit obtained; but on strong loams the growth is more rampant, and less firm. And close or severe pruning has a tendency, still further, to increase growth at the expense of the crops. When a case of this kind occurs (and it is not an uncommon one) if the young wood is well thinned out, leaving a well-placed young shoot wherever there is space, without crossing other shoots, and the leading shoots unshortened, or, at least, only shortened just sufficiently to maintain the symmetry of the bush, there will never be any difficulty in securing a good crop of fruit, unless, of course, it is cut off by frost in spring. But there will be less danger from that source, with bushes pruned on the long-shoot principle (if I may so term it) than if they were pruned in any other way, because they will be better clothed with foliage, which will in most instances be an effectual protection to the young fruit. This mode of pruning gives us an opportunity, whenever it is desirable, of cutting out an old branch from the bottom wherever a well-placed young shoot is coming up, and so prevent the bushes attaining an unwieldy size; but this, of course, should be gradually done. The Red Warrington is one of the most useful Gooseberries grown, but it has a troublesome weeping habit that renders it difficult to keep it off the ground by pruning alone; a very easy and simple way of doing this, and so to lay the foundation of a symmetrical bush is to fasten a stout wire ring, about 15 inches in diameter, to the top of two stakes driven into the ground, on opposite sides of the bush, and to tie up the young shoots, at equal distances, round its circumference. In the course of a year or two, when the requisite upward tendency has been given to the growth, the ring may be removed, if desired. And, afterwards, by pruning to a bud on the upper side of the branch, a continual upward growth will be maintained, and the fruit kept from all contact with the earth.

E. H.

ON SURFACE PLANTING FRUIT TREES.

I do not remember to have seen in any horticultural work the plan recommended by your correspondent "F." (see 416), but I have now growing within a short distance of my house several trees that were planted in that manner about thirty years ago. Some were planted in what was then a Grass field, but was being converted into an orchard. The staple soil varying in depth from 10 to 14 inches, lies on a substratum of shale or kale as it is called here, and which gives the red colour to the soil above it. If the good soil is removed, and a hole dug in a sub-soil that is injurious to the roots of the trees to be planted, their progress will be interrupted when they have filled the hole; they then have either to work into the bad soil, or upwards to reach the better, a very unusual, if not impossible process. To secure a better provision for the roots of my trees I proceeded thus:—I would not allow the turf to be disturbed, but fixed a strong stake in each of the places where the trees were to stand, and little walls of turf were raised in circles, each having a stake for its centre, and as close to it as the roots of the tree would allow when attached to the stake. Mould was then brought, and the space within the turves filled with it, leaving the tree potted, as it were, in turf. The advantages resulting from this method of planting are obvious; the sub-soil remains undisturbed, and the roots of the tree can work above it and into decayed turf, the very best soil that can be had. Trees planted in this way will, of course, require additional soil outside the walls of turf, extending in a sloping direction to the general level; but this operation can be performed gradually, and might be extended over many months. I was glad to be able to leave the trees for a time and attend to other matters; and many months elapsed before the slopes were completed with the spare soil and rubbish at that time at my command. The fruit trees that were treated in this way bore good crops for several years, but at last they suffered from the effects of the roots having penetrated the injurious sub-soil, which they must have done in the course of time; and many of them having ceased to bear have been, or are being, removed, and young trees of a different sort planted in their place. A common Oak tree (*Quercus robur pedunculata*), that was of the size of a walking stick when planted in the year 1841, now measures, at 3 feet from the ground, 44 inches round. This tree was planted on the surface, within a wall of turf, with upwards of a cart-load of soil surrounding it.

B. S.

KEEPING GRAPES ON THE VINES.

We have recently received letters from various localities, stating that Grapes that should have hung in good condition on the Vines for a long time have moulded and dropped from their stalks. In one case the whole crop of Muscats was literally lost. Considering the general dampness and want of sunshine which characterised the Grape-ripening months of August and September, and the heavy rainfall, it is not by any means surprising that Grapes should, in many instances, not keep well. There can be no doubt that the most disastrous failures have occurred from the want of studying the laws of heat and moisture in their relation to Grapes. If water stagnates about the roots of Vines in winter, that alone is enough to cause the Grapes to mould and decay. But the more general cause of failure arises from moisture settling on the bunches. The drainage of the border should be thorough. Not only so, but, in wet localities especially, it will be an advantage to throw heavy rains off the border by means of wooden shutters or tarpauling, after the middle of October at the latest. Still, and although this precaution of protection from rains is desirable, we could point to many cases of the most perfect success where such protection was never adopted, but where the borders were well drained. The chief secret of success lies in the ventilation and firing of the Vinery; and, when these points are judiciously carried out, Grapes often keep well, while other matters may only be second-rate. First, it is necessary that the berries be more severely thinned than for summer Grapes, so that the air can circulate about the whole of the berries; for it is damp settling on the berries that produces the mischief, and, as a consequence, this is the thing by all means to avoid. Hence the too common practice of ventilating freely on damp foggy days is a great mistake. This is simply drawing a volume of air surcharged with moisture through the Vinery, to be condensed on the bunches and Vines. Fire-heat in conjunction with ventilation on such days does not mend the matter; it rather increases it, by causing

a more rapid current of damp air to pass through the Vinery. The thing to do is to keep the house close, especially at the front, during foggy damp weather; to keep the temperature about 45°, and just a chink of air at the top, but, if possible, in such a manner that damp does not fall into the house: hence the value of wet-weather ventilation, as it is called. The time to fire and ventilate Vines freely is on bright dry days, when it is certain that in the circulation more damp can be expelled than there is admitted, and always dropping the heat to the minimum of 45° to 50° before night. All inside surfaces should be dry after the 1st of October, and never moistened, and a low stagnant temperature should be avoided. The result of having the air and Grapes inside the Vinery as cold as the external atmosphere, or nearly so, is, that the moisture that is admitted with the air from the outside condenses immediately on the surface of the berries; whereas, when they are warmer than the external air, they do not act as condensers. This law of heat and moisture is very strikingly exemplified by walking into a moist stove with a piece of smooth cold wood or slate, or, in fact, any cold, hard, smooth substance. The result is, that it is immediately covered with dew-drops. The cold substance has condensed the particles of moisture in the warm air—and just so the Grapes act to their own destruction. The temperature should therefore be kept steadily above that of the external air, to prevent this destructive result. We know of a whole Vinery full of Grapes being lost last year by an amateur, simply by his keeping the front and top ventilation always open in the dampest weather, and so subjecting the Grapes to a cold vapour bath. There is one particularly ticklish time or stage when Grapes are the most difficult to keep, and that is, just as the foliage begins to change to the "sere and yellow leaf." Some varieties of Grapes are then very subject to go wrong under the best treatment. Small white stars of decay, cutting into the skins and radiating from a centre like a star, first appear, and soon the whole berry goes wrong. The first signs of this should incite to more vigilance. The affected berries should be at once removed, and all the laterals where there are any; and where there are not, a portion of the foliage should be removed, so as to let light and air play more freely about the bunches. We have known the progress of decay arrested by removing part of the leaves while they were comparatively fresh. No doubt the removal of part of the foliage helps to paralyse the roots, and prevent the pumping up a superabundant supply of sap to the Grapes in a crude state; at all events, it admits a freer circulation of air, and a stagnant atmosphere is an evil. We have kept Grapes this season till very lately in a low sunk pit under obscured glass, and, we may say, under a constant downpour of rain, by simply keeping the pipes constantly warm, and surfaces perfectly dry, so that the Grapes were always too warm to condense moisture. Out of 300 bunches under such conditions, not 2 lbs. were lost by decay; while if the fire-heat had not been constant, and a cold stagnant air allowed, we are certain the result would have been the very reverse.—*The Gardener.*

Madresfield Court Grape.—This has proved itself with me to be one of the finest of the new Grapes lately sent out. I was very nearly being persuaded that it was useless on account of its cracking. On second thoughts, however, I determined to give it a fair trial before condemning it, and it has more than answered my expectations. I must confess that I have taken extra care with it, but not extraordinary pains. Why, if one tries, any sort of Grape may be made to crack. I think it has been admitted by our best Grape-growers that this was the choicest Grape, and one of the best finished at the International Show at Manchester. On that occasion I was awarded the first prize for bunches covered with a most beautiful bloom, and having the flower at the end of the berries, such as we like to see on the end of a well-grown Cucumber. Of this Grape I venture to send you a few berries, which may serve to confirm the statements just made. They have been ripe about four months.—JOSEPH MEREDITH, *The Vineyard, Garston, Liverpool.* [The berries sent were large in size, as black as Sloes, and excellent in flavour. The travelling had, however, robbed them of their bloom.]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Large Pears.—Some days ago I saw a few exceedingly fine specimens of Uvedale's St. Germain at East Cowes Castle, Isle of Wight. One of them measured 13½ inches round the middle, and was 8½ inches long, exclusive of the stalk. Of Duchesse d'Angoulême and Crassane, too, there were many fruits weighing a pound each. They were grown against a dwarf terrace wall facing the south-west.—W. F.

Dressing for Vine Rods and Peach Trees.—Will you be kind enough to give a receipt for dressing Vines, and orchard-house Peach trees? [Wash the Vines well with soap and water, and when they have dried paint them with two parts flowers of sulphur, two parts of soil, one part of soft-soap, and two parts of clay, reduced with water to the consistency of paint.]

THE INDOOR GARDEN.

SONERILA AT GUNNERSBURY.

THIS, although an old favourite in our stoves, is, nevertheless, one of the prettiest little plants in cultivation. Its little leaves, thickly beset with pearls, afford sufficient beauty in themselves to render it worth growing. But, in addition to this, it is a profuse winter-blooming plant, and one which is very easily managed. It likes a brisk, moist temperature, and grows well in a compost of loam, peat, chopped Sphagnum, and sand, and it is rather partial to some nice leaf-soil. It may be propagated by means of cuttings, or rooted layers, produced by pegging down the shoots, when they root at every bent joint. Young plants of this are perfect gems, and they develop their leaf markings to best advantage when grown under bell-glasses, like some of the finer Bertolonias. Such care is, however, quite unnecessary, considering that they grow and flower so freely in an ordinary stove. At Gunnersbury Park, I noticed last spring, that some flat pans, 15 inches in diameter, had been filled with the soil already recommended, planted with rooted layers of *Sonerila margaritacea*, and kept in a warm corner of the stove. I saw these plants again a few days ago, and was quite surprised at their progress. The specimens were 2 feet through, thickly set with leaves, and every point produced a spike of erect pinkish-mauve flowers, containing prominent and showy yellow anthers. Such a free-growing and abundant winter-flowering plant should, therefore, receive good attention, for, although the cut blooms, like those of most other Melastomaceous plants, are not very useful, the plants have a charming effect when grouped along with other green and brilliant-leaved ones, and in gas light they have a peculiarly rich appearance. W. F.

Plants for a North House.—Will you kindly name a few plants that will succeed permanently in a house having a northern aspect, excluding Ferns and Camellias, of both of which I have a good stock?—BETA. [The kind of plants that will succeed in a north house will in a great measure depend upon the situation in which the house stands. If it stands against a building or dead wall considerably higher than the house itself, or is placed so as to be under the light-absorbing influence of high trees, then very few plants will grow satisfactorily in it; but if, on the other hand, none of these difficulties exist, there are numbers of plants that will succeed in such a situation, especially if they are elevated near the glass so as to get all the light possible. *Primulas*, *Cinerarias*, *Calceolarias*, *Fuchsias*, *Cyclamens*, *Hyacinths*, *Narcissus*, *Tulips*, *Lilium auratum*, *L. eximium*, *L. lancifolium* of different sorts, *Agapanthus umbellatus*, *Vallota purpurea*, *Solanum Pseudo-capsicum*, *Epacris* of different kinds, *Acacia armata* and *A. Drummondii*, *Cytisus racemosus*, *Centaureas*, *Crocea saligna*, *Daphne indica*, *Hydrangeas*, *Plumbago capensis*, *Richardia (Callia) æthiopica*, *Veronica Andersonii*, *Dracena indivisa*, *D. australis*, *Yuccas*, *Lomatia filicifolia*, and *heterophylla* are some that will succeed, with good attention.]

The Moon-creeper (*Ipomœa Bona nox*).—This chaste and beautiful climber is occasionally met with, but its property of flowering at night no doubt interferes with its more extended cultivation. A fine plant of it can now be seen in the nursery of Mr. F. R. Kinghorn, Richmond, growing vigorously and blooming freely, its large alabaster-white flowers being fully 8 inches in diameter. Mr. Kinghorn received some seeds from the West Indies under the name of the Moon-creeper, and on growing them it is found to be *Ipomœa Bona nox*. It is a tender annual, and does well in a low span-roofed stove-house, where it can run along the roof. The flowers open soon after dusk, and are in the fulness of their beauty in the dead of the night, and they continue expanded till nearly noon the next day. There is such an exquisite delicacy about the shining whiteness of the flowers that it is a matter for wonder it is not more generally cultivated, its night-flowering property notwithstanding. There is no difficulty in obtaining seed, and they should be raised in a moist brisk heat in April, grown on quickly, and potted into a large pot to flower, or be planted out in a small pit or any convenient place, and trained along a wire or any such support under the ridge of a span-roofed house, or in any suitable place.—R. D.

Compost for Palms.—What compost do you recommend for *Seaforthia elegans* and *Areca lutescens*? Should they have much water?—A SUBSCRIBER. [Both *Seaforthia elegans* and *Areca lutescens* thrive in a good substantial loam, with the addition of about one-fifth of well-decayed manure. The loam, if fibrous, will require no sand, but, if close and heavy, some rough river-sand should be added. These Palms also grow well in peaty soil, but it is not so lasting as loam. These plants should never be allowed to become quite dry; on the contrary, they should have abundance of water at the root, overhead, and in the atmosphere, from March till September, when the supply should be gradually lessened, but the soil in the pots must always be kept moderately moist. Daily syringings are necessary in the summer time, but in winter, about once a week will be sufficient, and that only on bright days.]

THE GARDEN IN THE HOUSE.

ARRANGEMENT OF FRUIT FOR DESSERT.

I SHOULD recommend glass dishes for this purpose, in preference to others, as they have a much lighter appearance when placed on the table. Let us suppose that, for ordinary occasions, not less than four dishes are used; in that case, place one of them at the top and one at the bottom of the table, and the other two in a line with them, one on either side of the centre, *i.e.*, assuming that a plant or stand of flowers occupies that position. This I consider would be a good arrangement for, say, six persons. In using six dishes, have the top and bottom ones as just stated, placing the other four two on each side, at right angles with each other, working from the centre of the table. Supposing the table to be 6 feet wide, I would place them 2 feet from the sides. For eight dishes, add one more on each side, and so on up to a dozen which would be sufficient for a table laid for twenty-four persons. I would not advise placing dishes of fruit in a line with the centre of the table, where more than four dishes are used, for the following reasons:—They would create a heavy appearance and detract from the effect produced by flowers where such are used. In the case of a table laid for eighteen or twenty persons, I would use, say, three March stands, such as I exhibited at the Crystal Palace (see numbers 95 and 96 of THE GARDEN). I would not place anything between these stands that would cause any obstruction, or give the table a heavy appearance when looking down it from top to bottom. In dishing up fruit, I would not intermix flowers with it, but rather keep the two separate, for in removing the fruit in most instances the flowers get disarranged, and the effect which they would have produced is spoiled. The dishes should not be crowded with fruit; rather have a few of each kind in reserve for use if required; also where possible keep each kind of fruit by itself. I do not however, intend by this to make one dish of black and another dish of white Grapes; these should be used together for contrast, and the same should be done with other kinds of the same fruit; by so doing they present a better appearance when on the table, than when in separate dishes. For dishing up fruit, Vine leaves are more useful than any other, especially at this season, and those of the Barbarossa, with their varied tints of colour, have a pretty appearance. For intermixing with fruit, the cut-leaved variety of Sweetwater Grape, a few fronds of Maiden-hair, or other light-looking Fern, are a great assistance; also *Lygodium scandens* twined carelessly amidst the fruit or on the stems of the dishes. I have used glass baskets with a good effect for fruit, especially for a table of moderate size. Always select the two best kinds of fruit for top and bottom dishes. J. HUDSON.

Champion Hill.

FRUIT of all kinds are very effective for dinner-table decoration when tastefully and judiciously dished up, although the chief object in placing fruit on the dinner table is, that it may be eaten, and consequently we must avoid working it up into complicated designs along with flowers and Ferns, or other permanent floral decorations. Fruit may either be grouped in an epergne or arranged on simple dessert dishes. Dessert plates and dishes of porcelain are now very tastefully decorated, while some furnishers employ simple dishes or small baskets of glass with good effect. Fruit generally looks well dished up with its own foliage, providing always that it is fresh and clean. During the autumn months, however, the bright crimson and yellow-tinted leaves of Virginian Creeper, Grape Vine, Berberis, or Maple, may be used as affording an agreeable variety. Monotony or sameness is always to be avoided in decorations of all kinds, for, next after skilful grouping, a pleasing variety affords us the most satisfaction in return for our labour. Some fruits, more especially Grapes and Plums, require careful handling, or their delicate bloom is destroyed, and much of their beauty lost. Grapes always look well arranged with their own foliage, two bunches of white and one of black, or *vice versâ*, forming a nice dish. Lay the base of the foliage inwards, so that the serrate or fringed margins may form a neat border around the edge of the dish or plate. Some use the elegantly curled foliage of *Malva crispa* for Grapes as well as Peaches,

while Strawberry leaves are very appropriate and generally obtainable. Ivy and Fig leaves are sometimes used, but their odour is rather offensive to some persons. I have seen Grapes, Plums, and Peaches very tastefully grouped on a cool fresh bed of *Selaginella (densa) apoda*, which had previously been grown in shallow circular pans just the size of the dessert dishes, and in which it was placed. Strawberries also look well on this material, although their own foliage is most appropriate. A neatly arranged dish of Strawberries is a very suitable ornament for the breakfast table. To arrange them, first fill the bottom of the dish with fresh green foliage, so as to form a cushion for the fruit. The bottom layer can be formed of the smaller fruit, in order to make a firm base for the finest berries. Now take the largest and freshest fruit, and wrapping each in one of its own leaves, arrange them in a circle round the sides of the dish, filling in the centre with the smaller ones, unless you have enough of the large ones to fill the dish. Add layer after layer, each being about an inch less in diameter than the one before, until the whole is finished. If neatly done, the fruit looks deliciously tempting as it peeps out from the fresh green leaflets. Figs require careful handling, if fully ripe, and look well grouped on a flat dish or plate with three or four of their own leaves. Half-a-dozen Peaches or Nectarines make a handsome dish, and may be put up either with their own foliage, or with Vine leaves. A very agreeable variety can be infused into the dessert by using the various tropical fruits and nuts which are now imported into this country in considerable quantities. Plantains and Bananas, Figs, Dates, Muscatels, Prickly Pears, and Oranges, look very nice when neatly arranged on fresh green foliage, but they must be used to augment rather than to supply the place of Grapes, Peaches, Pears, and other home-grown fruits. Leaves of *Passiflora (racemosa)* Princeps are sometimes used with good effect in the arrangement of fruit, as are also the light green fronds of *Polypodium cambricum*, or Welsh Polypody. Melons and Pines are generally set up on a dish to themselves, but sometimes they are grouped artistically in an epergne along with Black and White Grapes, Peaches, Nectarines, and other fruits. Apples and Pears are arranged in the same way as Peaches, half-a-dozen good fruit forming a nice dish for a moderate party. Small fruits, such as Raspberries, Gooseberries, Currants, and Mulberries are generally picked with their stalks intact, the very finest only being used, and these are either arranged loosely in the dish on a carpet of fresh leaves, or grouped like Strawberries. F. W. B.

CHRISTMAS DECORATIONS.

MATERIALS for this purpose can be produced abundantly and cheaply, and there is no lack of subjects that can be brought into use at this festive season if we take the trouble to examine the lists of flowering plants and berry-bearing shrubs, foliage plants, and Grasses. Some amount of convenience, and skill and patience to grow some of them, are, of course, required, but there are decorative plants for those of humble means as well as for the upper classes. I therefore propose to name some that can be had at the season, and the first on my list shall be the berry-bearing plants *Solanum Capsicastrum*, and *S. Pseudo-capsicum*, and their varieties. A nicely furnished plant of the variegated variety makes an admirable subject for dinner-table decoration. These plants cut up admirably for filling small vases. Next come the varieties of *Skimmia*, such as *S. Reevesii*, *S. oblata*, and *S. japonica*; then we have the pretty *Rivina humilis*, with its bright red berries, as well as the *Aucuba japonica*, and those that have stoves may have *Ardisia crenulata*, while the shrubberies might furnish the common *Euonymus europæus*, Holly, and *Cotoneaster macrophylla*. For seasonable flowers, we have *Camellias*, Chinese *Primulas*, *Cyclamens*, winter-flowering *Carnations*, *Mignonette*, *Euphorbia jacquiniæflora*, *Thyrsacanthus rutilans*, and *Poinsettia pulcherrima*. The latter is a beautiful plant for the dinner-table, and a cut bract of it, surrounded with *Helleborus niger*, and sprays of Fern, has a charming effect. There are hosts of plants that may be forced, and others that may be retarded in flowering. I have not given any cultural directions, as my object is merely to name such plants as may be had at the season. We have also flowers and Grasses, that, when gathered through the summer, are charming during the winter, and will last, I may say, for years, if not exposed to dust and smoke. The flowers I shall name for drying are *Aphelexis*, *Gompholobium*, and *Statice*. I must add the pretty little white *Ammobium*, which is a perennial. *Acroclinium roseum*, with

its lovely tint of rose-pink, is a gay addition; the white variety is a charming annual of the easiest cultivation. The pretty *Rodanthes* will well repay any extra care they may require in their cultivation. Lastly, *Polycolymna Stuartii*, and the *Helichrysums*. On these the decorator may depend, as they may be had in many colours.

The list of Grasses might be enlarged to any extent if required, but I shall name those that I consider the best; they are always useful for associating with flowers, and produce a graceful effect. The best are:—*Avena sterilis*, *A. nebulosa*, *A. plumosa*, *A. pulchella* (very pretty), *Bromus brizæformis*, *B. maximus*, *B. gracilis*, and *B. minor*; *Chloris radiata*, *Ceratochloa pendula* (flowers in an imposing spike), *Chloris barbata*, *Eragrostis elegans*, *Hordeum jubatum*, *Elymus glaucus*, *Lagurus ovatus*, *Leptochloa Schimperiana*, *Monochaetum roseum*, *Panicum sulcatum*, *Paspalum stoloniferum*, *Pennisetum longiflorum*, *Panicum jumentorum*, *Milium multiflorum*, *Panicum compressum*, *Stipa elegantissima*, *Setaria macroseta*, and last, but not least, the Pampas Grass. Such plumes as we have of this fine Grass compel me to put it in the foremost rank of large decorative plants. Of our wild native Grasses I will name what I think the cream, viz., *Aira cæspitosa*, *Agrostis Spicaventi*, *Arrhenatherum avenaceum*, *Avena flavescens*, *Melica uniflora* (very pretty), *Glyceria fluitans*, *Festuca gigantea*, *Bromus asper* and *sterilis*, *Juncus lamprocarpus*, *Carex remota*, *C. pendula*, and *C. sylvatica*. To these may be added the varieties of cultivated Oat.

The Croft, Walton-on-Thames.

F. L. BARNES.

Perfumes.—Our fair readers may be interested to learn where for the most part, the flowers grow the sweet perfume of which is found in those pretty *flacons* on their dressing-tables. The chief places of their growth are the south of France and Piedmont, namely, Montpellier, Grasse, Nîmes, Cannes, and Nice; these two last especially are the paradise of Violets, and furnish a yearly product of about 13,000 lbs. of Violet blossoms. Nice produces a harvest of 100,000 lbs. of Orange blossoms, and Cannes as much again, and of a finer colour; 500 lbs. of Orange blossoms yield about 2 lbs. of pure Neroli oil. At Cannes the *Acacia* thrives well, and produces yearly about 9,000 lbs. of *Acacia* blossoms. One great perfumery distillery at Cannes uses yearly about 140,000 lbs. of Orange blossoms, 140,000 lbs. of Rose leaves, 32,000 lbs. of Jessamine blossoms, 20,000 lbs. of Violets, and 8,000 lbs. of Tuberoses, together with a great many other sweet herbs. The extraction of the ethereal oils, the small quantities of which are mixed in the flowers with such large quantities of other vegetable juices that it requires about 600 lbs. of Rose leaves to win one ounce of otto of Roses, demands a very careful treatment. The French, favoured by their climate, are the most active, although not always the most careful preparers of perfumes; half of the world is furnished by this branch of their industry.

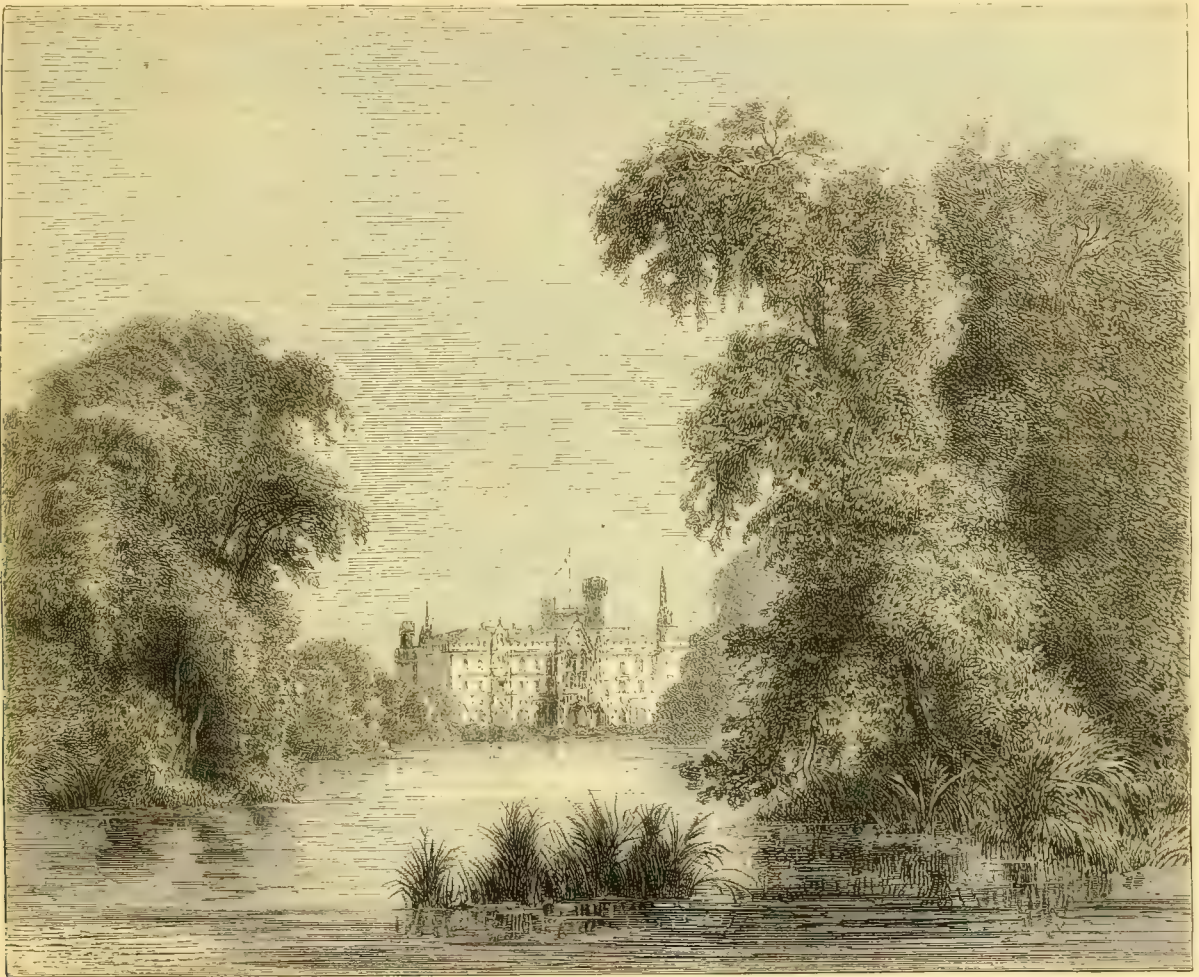
My Window-box.—In the summer of last year I filled a box with different kinds of plants suitable for window decoration, and placed it on the window-sill. The eaves of the house projected at least 4 feet, thus affording good shelter. The plants, Ivy-leaved *Pelargoniums*, *Fuchsias*, *Calceolarias*, *Gazanias*, *Tropæolums*, *Lobelias*, *Petunias*, and common *Geraniums*, grew well during the summer, and as I watered them attentively they flowered beautifully until late in the autumn, when some of them began to look ragged. As I had plenty of nice plants in pots I paid no attention to them until November, when I cleared all out except the first four, which looked fresh and healthy, I therefore left them alone, and dibbled in around them some spare *Crocus* roots. The *Fuchsias* lost their leaves, but the others kept fresh all winter, and in spring I had a beautiful display of flowers in my little box. In May I entirely overhauled it; I picked out the *Crocus* roots, and removed as much of the old soil as I thought would not injure the roots of the plants, replacing it with fresh material, and adding a few more little *Heliotropes* and *Lobelias*. The result has been most satisfactory, but the plants grew rather thickly, which I readily rectified by using my scissors, and by spreading out the branches of my massive Ivy-leaved *Geraniums*. The *Fuchsias*, *Calceolarias*, and *Gazanias* all bloomed brightly and profusely, and, although I have left them again in the box this winter, I fear that they have grown too much to remain there next year. They have had no protection whatever in winter beyond that of the overhanging roof, which certainly keeps off rain and snow, but does not obviate cold and biting winds.—M. W., Colchester.

A Pretty Table Ornament.—I was much struck lately with the wonderfully beautiful effect produced by simply placing a handful of heads of Wheat in a vase of water. Each grain sent out bright green leaflets, and continued to replenish the fading ones for weeks together. Some have doubtless seen this pretty table ornament, but to me it was new, and perhaps would be so to many others.—J. P., Chatham.

THE CHATEAU D'EISGRUB.

TOWARDS the close of the Austro-Prussian war in 1866, the preliminaries of peace were negotiated and signed in the château which forms the subject of our illustration. The Château d'Eisgrub, which was previously known as the most splendid country-seat in all Germany, has thus become historical. It is one of the numerous properties of the noble and wealthy family of Liechtenstein (who are said to possess ninety-nine estates in various parts of Germany), and is situated in the south of Austria, on the confines of Moravia, and close to the river Thaya. The building is a handsome one, in the semi-castellated style of architecture, and, in the costly magnificence of its interior arrangements, decorations, and furniture, is not surpassed by any royal palace in Europe. It

Hasenburg, a château of the middle ages, surrounded by a well-stocked menagerie; temples of the Muses and of the Graces; and lakes, one of which forms the boundary between Austria and Moravia. In the middle of the forest there is a hunters' *rendez-vous* or meeting place, in the form of a kind of triumphal arch, in the old Roman style of architecture, adorned with statues of Endymion, Diana, Actæon, and Bacchus. It would occupy a long chapter simply to enumerate all the wonders to be seen around this more than princely residence." Our illustration shows a very charming river view of the château, and of the picturesque and beautiful effect of the trees and other vegetation on each side of the water. From this point, the view of the château would, no doubt, have been much more effective, had the elevation of its



Château d'Eisgrub.

is the favourite summer residence of the Liechtenstein family. From a brief account of it, taken from Ad. Joanne's "*Itinéraire de l'Allemagne du Sud*," we learn, amongst other matters, that "the Orangery, which is 487 feet long, contains 900 Orange trees, some of which are more than 200 years old. The glass-houses contain various exotic plants, among which there are upwards of 1,500 Agaves or Aloes. The park, which is watered by the river Thaya, is the finest in all Germany, and contains a splendid collection of ornamental trees of every kind, and a mosque, the minaret of which is ascended by means of a winding stair of 302 steps, and rewards the climber by an extensive and charming view of the surrounding country from its summit. This mosque is said to have cost more than a million of florins (£100,000). In addition to these are a Chinese pagoda, a bath-house, a fisherman's cottage; the

site been somewhat higher; still, with all the disadvantage of a low position, it must present an imposing appearance, as one comes suddenly upon it round the bend of the river. W. M.

Naturalised Weeds.—Two hundred and fourteen of our weeds have, says an American paper, been introduced from foreign countries and chiefly from England. In 1837 only 137 foreign weeds were enumerated in our catalogues. In 1672 a book entitled "*New England Rarities*," gave a list of twenty-two plants, which the author spoke of as having sprung up since the English took possession. Among these the Plantain, "the white man's foot," is mentioned. In 1758 the Toad Flax or Butter and Eggs, had overrun the pastures of Pennsylvania, and had caused many anathemas by the farmers against the unlucky introducer.

THE ARBORETUM.

SUBSTITUTES FOR THE LARCH.

SINCE the outbreak and general spread of the Larch disease in many wood-producing districts of the country, by which confidence in that valuable Conifer has been shaken, attention has been directed towards finding a substitute, alike rapid in growth, suitable for a variety of situations, of equal durability as a timber tree, and adapted to a similarly wide range of economical uses. The three varieties of Fir, distinct and widely different in their natures and habits, which form the subject of this paper, have been successively brought under public notice as valuable trees for British culture, and worthy of extensive cultivation. Introduced at different dates, and consequently with a considerable difference of years' experience from which to judge of their respective merits, as worthy successors to the fine old Larchwood of which the country could formerly boast, there can be no doubt that all three have proved to be well adapted for culture in Great Britain, and also suited to a variety of soils and situations. The three varieties now under consideration present individually distinct characteristics; and although the Corsican and Austrian Pines resemble each other, they are quite distinct species.

The Austrian Pine.

This Pine (*P. austriaca*) has at times been styled "*quasi* Corsican," a name to which it is not entitled, for its distinguishing features from *Pinus Laricio*, or Corsican Pine, are observed to be constant in the growing state, and when compared as timber in the sawn plank, there is a marked difference. The *Pinus Douglasii*, on the other hand, more nearly resembles the common Silver Fir (*Picea pectinata*) in colour of foliage and bark, with somewhat of the habit of the Spruce in outline. The comparatively recent introduction of this last-named Pine renders it more difficult to speak with certainty of its value as timber, seeing it has not yet been tested as a timber-yielding tree; and where specimens have been cut down, the rapidity of growth in early years prevents such cases being fairly cited as any criterion of what the species may prove, when felled in a ripe state, with fully developed timber. Considering, then, the three Pines which form the subject of review, we notice first the Austrian Pine (*Pinus austriaca*). This Conifer is generally admitted to have been introduced into this country about the year 1835. Its native habitats are Lower Austria, Styria, Moravia, Carinthia, Transylvania, and the south of Europe generally. It is a most useful variety, whether shelter, timber, or ornament is the object mainly in view in planting. In its young state it is of rapid growth, acquiring in a few years a heavy rounded head, and being rather weak-rooted, like most of the fast growing Pines, it is apt to become "winded" in exposed situations in rich soil. In fact, an old and hard-hearted Scotch forester once remarked to us, referring to *Pinus austriaca*,—"Eh, sir! it's hard to keep her on her feet, when young, in exposed bits!" This habit of forming a dense, heavy top when young is productive also of another evil, for such a mode of growth must engender the formation and encouragement of many side branches, and so detract from the value and bulk of wood in the trunk. As an ornamental Pine, *Pinus austriaca* is undoubtedly a great acquisition; its dark, rich green foliage, its dense head of massive contour, its strong side-shoots, and its rapid rank growth, all contribute to render it a tree of desirable habit for effective purposes; but we fear that when compared for economic purposes with the other two species referred to in this paper, it will be found deficient in quality, texture, and durability. The soil in which *Pinus austriaca* flourishes in its native habitats is a thin cold dry soil, of sandy or gravelly tendency; and in such situations it will thrive admirably, and succeed as a timber tree, much better than in rich alluvial deep soil, although more sheltered. In fact, it appears impatient of mild sheltered positions, preferring those apparently less suitable for the growth of timber. As already stated, it is not so well adapted for situations much exposed to heavy prevailing winds, being weak and shallow-rooted in its younger state, and at the same time densely clothed with close umbrageous foliage, which renders it not unfrequently what might be termed "top-heavy." In localities suitable for its development, and not exposed to heavy winds, *Pinus austriaca* will attain a greater height than the Scotch Fir (*P. sylvestris*), and is of equally, if not more, rapid growth. The wood is inclined to coarseness, but is tough and firm in texture, rather knotty, but of more commercial value for country purposes than the timber of equal age of either Larch, generally, or the Scotch Fir. As compared with the Corsican Pine (*P. Laricio*), the growth of the Austrian Pine is not more rapid, and it is less suitable for exposed situations. *Pinus austriaca*, in habit and value, more nearly resembles *Pinus Pallasiana*, but both are inferior as wood to *Pinus Laricio*. The leaves of the Austrian Pine are easily distinguished from those of the Corsican, by their being rather longer, and devoid of the twisted appearance which those of the latter present. As a tree to employ as a nurse in sheltered valleys it is invaluable,

owing to its dense head, spreading arms, and rapid growth; and to be cut out when it has not attained full size, it is more valuable than the Scotch Fir, as it can be profitably used for country purposes at a younger age than almost any other Fir. Lamp-black and charcoal of excellent quality can be obtained from its branches, and the thinnings are, in its native country, much sought after by coopers and carpenters.

The Corsican Fir.

We proceed now to consider the Corsican Fir (*Pinus Laricio*), and its suitability for general and extended cultivation in this country. This Pine was first discovered in dense forest masses in Corsica, whence it was introduced into this country towards the end of the eighteenth century. It has since been found over several countries of Southern Europe, including Spain, Greece, and Italy, and it abounds on the mountain lands of Calabria. In these, its native habitats, it attains to a height of 140 feet, and forms a noble tree of bold, erect, open habit. The wood is extremely resinous, tough, and, although tending to coarseness, not so brittle as Scotch Fir or Austrian Pine of equal age, but is elastic and durable; under the tools of the carpenter it works smoothly and easily, and is much prized for many outdoor or constructive purposes. Felled when about seventy or eighty years old, the wood is found to be well matured, and of a whitish colour, and brown near the heart. In this country, the *Laricio* has been extensively planted during recent years as a timber crop, and since the Larch failure, probably this Conifer, more than any other, has been substituted for it. It thrives in almost any soil where the Scotch Fir or Spruce succeeds, but will not attain its full development at the higher altitudes, preferring a rather good deep soil and sheltered situation in its younger stages; for being of very rapid growth and early vigorous habit, like *P. austriaca*, it is apt to form a top rapidly, which the slower formation of roots cannot support during high gales of wind. In this aspect, however, it does not equal the Austrian Pine, and is materially assisted by its characteristic tendency to throw the vigour of its growth more into the trunk and terminal leader, than to form a dense head or many heavy side branches. Another benefit accruing from this erect or fastigate habit is the ultimately enhanced value of the timber, by its being less knotty and of better texture. In general appearance when young, the *P. Laricio* somewhat resembles the Scotch Fir of the old Strathspey indigenous type, but it is more open and longer between the tiers of branchlets. Its value as timber is not so marked when the tree is young, for thinnings of *Laricio* are found to be soft, and less durable than Larch, but when old it is reported to be remarkable for its toughness, and it is strongly impregnated with resinous sap. Numerous groups and specimens of the *Laricio*, 40 feet in height, exist in various parts of the country; and in Perthshire, at 600 feet elevation, in a loamy soil and gravelly sub-soil, it proves itself equal to any indigenous Fir, resisting alike the gale and winter's storm, and rapidly shooting above contemporary trees of Scotch Fir, Larch, and *austriaca*. It may indeed be described as a tree consisting of the bole of Larch, with the lateral branchlets and foliage of Scotch Fir. One qualification of considerable importance possessed by the *P. Laricio* should not be overlooked—namely, its distastefulness in its young state to hares and rabbits. Without positively asserting that ground vermin will absolutely shun the young *Laricio*, if mixed with other Conifers in a plantation, it may be safely asserted that they will nibble away everything else before they will touch it. An experiment to test this was made some years ago at Tortworth Court in Gloucestershire, where Lord Ducie planted a young *Laricio* in the centre of a rabbit-warren, and which, until the ground was quite covered with snow, the teeming population of the spot did not touch; and even then, when starving, and naturally less capricious in their bill of fare—after an attempt to consume the young needles of the buds—they abandoned the experiment, and sought some less bitter and astringently resinous food. In like manner, *Pinus Laricio* is less liable than any other Pine to suffer from the ravages of insects or such like enemies, which infest and disfigure many of the Coniferous family. Although we have said that the *Laricio* exhibits a preference for a deep good soil, it thrives in almost any other description, if we except soft, spongy, and undrained marshy ground. Being of a deep tap-rooted habit, in such a situation the sponginess of the main radicle get chilled and water-logged, and hence the tree will not succeed. Throughout the country it has within the last thirty years been freely planted in all sorts of soils and elevations, and has been proved to be perfectly hardy, and altogether such a variety as ought to be more generally cultivated; for while it is a rapid grower and a handsome tapering tree, it is well calculated for planting in masses, as a crop to produce not only quantity within a period of forty years, but quantity of heavy size, and timber of excellent quality. Although in its native country it is felled at about eighty years old, it may be profitably used at even thirty years. It may be seen luxuriating, and of considerable height, at Dolphinton

in Lanarkshire, at an altitude of 900 or 1,000 feet above sea-level; and in many other counties in the north of Scotland, specimens of the *P. Laricio* show that it is suited to the climate of Scotland. From the long tap-root of this Pine, it is, unless frequently and regularly transplanted when young, somewhat difficult of removal, and when forming plantations small plants should be used, as they will ultimately succeed better than those that have had their tap-roots cut when young. The true variety of *Pinus Laricio* was somewhat scarce two or three years ago, and as there are several other varieties which, when young, closely resemble it, care is requisite to obtain the true kind, where the *Laricio* is desired for ultimate profit and for heavy timber purposes.

The Douglas Fir.

The other Conifer which, at the outset of this paper, it was proposed to notice, is *Pinus Douglasii*, or *Abies Douglasii*, as it is more correctly called. This well-known tree is probably the most popular of the many excellent introductions of its original and ill-fated discoverer, whose name it so appropriately bears. Its first appearance in Great Britain was about the year 1827, when it was raised from the seeds of cones brought by Douglas from the banks of the Columbia river, where it abounds in immense tracts, covering the lofty hill-sides, and appearing near the summits of the Rocky Mountains no larger than a mere bush, and gradually increasing in its proportions until in the valleys and at the foot of the mountain ranges it attains a height of 200 feet, with a straight noble stem fully 10 feet in diameter. It is common also in California, and in Mexico a variety of smaller growth, and with longer leaves of a deeper green colour, is found. In Scotland, this Fir has proved perfectly hardy, of very rapid growth, a most graceful tree for ornamental or park purposes, and a valuable timber producer. It has been planted in every conceivable soil and situation, and adapts itself to almost any description, provided the drainage of the sub-soil be porous, so that it does not become "water-logged." It thrives at any elevation, and the only drawback is its tendency to lose its leading shoot in early spring, or liability to have it broken over, by any bird alighting upon its sap-surcharged stem. This is, however, in a great measure only of secondary importance, for the rapidity with which the Douglas Fir repairs the damage is amazing; and we do not think, unless in very exposed open situations, where it is liable to receive the full force of the west and south winds, which are so prevalent in Scotland, that this tendency should be any detriment to its cultivation. There are many other important qualifications, superior to both the *Laricio* and *austriaca*, which the Douglas Fir possesses, and which will, we think, tend ultimately to its being preferred by planters generally. While we can hardly point to a single specimen of either of the two former named Pines of 50 or 60 feet in height in this country, we have instances of the Douglas in many places throughout the country of fully that size. At Dropmore, where one of the original seedlings is luxuriating in a naturally poor soil, this noble tree has already attained an altitude of over 100 feet! In many other situations, both in England and Ireland, we find it, not certainly of the immense height of the famous Dropmore tree, but of large tree dimensions, and in all varieties of soil, from sandy light porous earth to deep heavy loam and clayey sub-soil. For example, we find at Charlesfort, county Meath, Ireland, one plant in a sheltered site, in good soil, which in the spring of this year measured 40 feet high, and 3 feet 3 inches in girth at 3 feet from the ground, and which has during the past eight years increased by no less than 22½ feet! It is now about twenty years of age. In the same situation the *Wellingtonia gigantea*, now 29 feet 6 inches in height, has only increased during the same period 17½ feet; and the *Deodar*, now 36 feet high, only 14½ feet. The *Wellingtonia*, it should be added, is 4 feet in girth at 3 feet from the ground. At Balgowan, and Keillor, in Perthshire, at an elevation of 600 feet above sea-level, we find numerous Douglas Firs. Mr. Thomson, the enterprising proprietor, an enthusiastic arboriculturist, plants them and the *Laricio* by the thousand even at that elevation, and finds them invariably succeed rapidly and well. The tallest specimen there is in the Keillor Pinetum, where it has attained a height of 57 feet, and a girth of 5½ feet at 3 feet from the ground. The soil is a good loam on a gravelly sub-soil; but the situation is not unduly sheltered. It ought, however, to be stated that the altitude of this tree would have been much greater were it not that, equally with the other Pines at Keillor and Balgowan, it has suffered occasionally from the damage to its terminal bud and shoot, by black-game and capercaillie alighting upon them. This specimen was planted in 1833. Of the same age we found a magnificent *A. Menziesii*, now 46 feet high and 11 feet 3 inches in girth; also a *P. monticola* of same age, 46 feet high, and 5 feet 5 inches in girth, and all in the highest state of luxuriance and health. These measurements are given for comparison of the growth of those species with that of the Douglas Fir, and we may only further add, that there is also in the same situation a *P. nobilis*

planted in 1843 (ten years later), now 50 feet high, and 3 feet 9 inches in circumference. At Minto, in Roxburghshire, in good loam and upon a clayey sub-stratum, the *A. Douglasii* planted twenty years ago is now 36 feet in height, and nearly 3 feet in girth at 4 feet from the ground. At Carlowrie, Linlithgowshire, in deep heavy loam resting on clay, there is also one 25 years of age, and 36 feet in height, standing, however, in a rather exposed position for heavy south-westerly winds, from which it seems to suffer, and it has become "lop-sided." At Belstane, on the top of the Pentlands, and at an elevation of about 900 feet, this Pine thrives remarkably well. Planted in 1843, they were three years ago fully 50 feet high, and growing in a very poor and cold soil. Many other instances might be cited showing the adaptability of *Abies Douglasii* to all sorts of soils and situations in Scotland. The tree at Baith, near Kirkcaldy, in Fife, planted by Douglas himself, is now a splendid specimen, and grows within the influence of the sea-breeze, though in a somewhat sheltered site; and inland, on poor soil at Dolphinton, Lanarkshire, at nearly 1,000 feet above sea-level, it is thriving in quantities. When young, the bark of the *Abies Douglasii* is covered with numerous small blisters surcharged with highly aromatic and resinous sap, and breaking one of these, in passing through amongst a group of plants, quite perfumes the air around. As the tree grows older, the bark becomes dry, and of a greyish and rough appearance, quite different from the younger stages of its growth. The wood is reported to be very durable, tough, elastic, beautifully grained, and susceptible of a high polish. No doubt, the utility and beauty of the fibre of the wood in old specimen sections, point it out as suited for either constructive or decorative purposes; and the beauty, symmetry, and gracefully branching habit of the dark green clad branches and side shoots, combined with its rapidity of growth, render it equally well adapted in the live state for either ornament or profitable planting.

Considering, then, the prospective value of the timber of these three Pines respectively in Great Britain, we are inclined to assign the first rank as a valuable and useful wood of high quality to *A. Douglasii*, as it will to all appearances prove generally suitable for nearly every economic purpose; next may be ranked *P. Laricio*, as a very useful wood also, but coarser in texture and of less quality than the Douglas Fir; and to the third place we assign *P. austriaca*, which we should rather plant as an effective "massing" tree for park or drive decorative purposes, or for dense cover for background effect in ornamental planting. The timber is more adapted for common local country uses, than for sale as a wood for either useful or decorative household purposes.—*Proceedings of Scottish Arboricultural Society.*

DESFONTAINEA SPINOSA.

THIS has stood out here (West Cumberland) without any protection for at least seven or eight years, and, just before the late frosts, had seventy full-bloomed flowers on it, of the most brilliant and waxy dark orange; it is 2½ feet high and nearly 2 feet through, and is growing about 150 feet above the sea-level. I have another plant of it about twice the size, growing at an elevation of about 500 feet. These plants are seldom without flowers, more or less, throughout the summer, but bloom freely both early and late; this will have stood out at least fifteen years. Alongside the last-named a plant of the *Fabiana imbricata*, 5 feet high, is growing also without protection, and, although of a rather naked and straggling growth, it is very beautiful in spring, with its numerous long spikes of pure white trumpet-shaped flowers. As one of your correspondents recommends the *Cotoneaster* for covering walls (for which purpose it is all he says for it), I may add that it is equally efficient and beautiful as a hedge plant, if planted on a raised or natural bank. Such a fence is the sole protector of the above plants from cattle; its pretty little white flowers, like a sheet of snow, swarm with bees in early spring, and are succeeded by almost as many bright coral berries (or must I say Haws). But if you begin to flatter yourself, after enjoying their beauty all winter, that you are going to have another lot of bloom by way of contrast, don't be astonished, if, some fine morning a flock of Mistletoe thrushes (not Jack Frost) blights your hopes.

CUMBRIAN.

TREES FOR CHURCHYARDS.

IN selecting trees suitable for churchyards, the church itself must be taken into consideration, as it requires forms of growth suited to its style of architecture. A building with a spire requires trees of a pyramidal or conical growth around it, while one with a tower should have trees of bush-like appearance. These latter may, however, occasionally be mixed with the former, to give variety. Of course trees of a sombre character are the most appropriate, and Conifers furnish the most desirable subjects, selecting only those varieties whose growth would not occupy much space. Weeping Willows are

not unfrequently seen in village churchyards, but to secure a clean and well-kept surface deciduous trees should be avoided. Therefore, for a churchyard, whose building has a spire, the Irish Yew, with its deep green foliage, is one of the best of trees. The Common Yew should also be planted here and there, for the sake of variety, as should likewise Thujas, Junipers, Podocarpus japonica, and similar Coniferous plants. When the church has a tower only, we should plant *Taxus baccata* and *adpressa*, spreading Junipers in clumps, various Pines, and *Araucaria imbricata*. In Highnam churchyard may be seen a specimen of good taste in planting, an operation which was conducted under the supervision of Mr. Gambier Parry, a gentleman who provided the site and built the church in his own park. The churchyard, which is in the shape of a parallelogram, 94 yards long and 77 yards wide, is surrounded on three sides with a walk about 9 feet distant from a Ha-ha, which runs parallel with it. Along the sides of the walks are specimens of *Taxus fastigiata*, planted at equal distances of about 15 feet apart, carefully trained and pruned, also *Thuja plicata* at equal distances. Outside of the row nearest the Ha-ha, and next to it, are planted specimens of *Araucaria imbricata*, at angles with the Thujas. The east walk also has Thujas on each side, with a few English Yews, the original object probably being to obstruct the view from the highway, which is only a short distance off. On the north side there is an excavated walk which has banks sloping to the general level, on which are planted Junipers. Everything is kept in good condition, and a prettier churchyard than it is it would be difficult to find. D. C. P.

Wood Paving in the City.—The whole of Ludgate Hill, from top to bottom, has recently been paved with wood by direction of the Civic authorities, and is now, in comparison with what it used to be, a fine, commodious thoroughfare, almost noiseless from the traffic, easy to horses both in the ascent and descent, and to all appearance, so far, durable. It has been laid with blocks of the best Memel Fir timber, a little larger than ordinary bricks, all made to measure, and placed edgewise on a bed of gravel previously prepared, and into which the blocks are beaten into position by heavy paving rams. That done, hot molten tar is run into the interstices of the blocks, and the whole surface of the roadway thus welded together, so to speak, is afterwards covered with gravel and arched in the ordinary way so as to carry off the surface water in wet weather to gutters on either side. Of course, its durability has yet to be proved by actual experience, and that is a great point; but one great desideratum has been attained, and that is its comparative freedom from noise, and the firm hold it presents to horses' feet. It seems to be even more noiseless than asphalt, in that it is altogether free from the peculiar and monotonous "click" which asphalt in its best condition always gives off to the tread of hoofs. The surface is almost as springy as that of Epsom Downs. What it will be in a hard frost remains to be seen. The same kind of wood pavement and another description of that material are being tried now by the Corporation of London in various parts of the City, and the subject is exciting much interest. Mr. Haywood, the engineer to the City Commissioners of Sewers, is also specially engaged in investigating the comparative merits of asphalt, granite, and wooden pavements by the light of past experience, so far as he has gone, and he will shortly present a report on the whole subject.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Philadelphus amœnus.—This plant is a seedling of *P. speciosus*, and is remarkable for the abundance and beauty of its flowers. These are of medium size, of a pure milk-white colour, and very fragrant. They are produced in such profusion that, at the time of blooming, the plant is almost entirely hidden by them. Like all the other kinds of *Philadelphus*, this variety should be pruned as soon as the bloom is over. The young shoots should not be shortened, unless they grow immoderately long and disfigure the appearance of the plant.

Forest Planting on the Apennines.—The Marquis Ginori, we learn, has successfully commenced the re-wooding of his estates on the slopes of the Apennines, in the neighbourhood of Florence. On a large breadth of mountain which the torrents had swept bare as a turnpike road, he planted Oak, *Ilex*, Cypress, Pine, and other hardy forest trees, and these, after a growth of ten years, form a pretty and promising thicket, which year by year will grow broader and higher, and eventually become a forest. By clever management, the torrents, led into lateral channels, are converted into a friendly source of irrigation, and add to the interest of the experiment.

Propagating the *Leycesteria formosa*.—Can this be grown from cuttings at this season, and what kind of soil suits it best?—G. The best-rooted shoots of *Leycesteria* may be cut up now into pieces about 6 or 7 inches long, and inserted thickly in a border under a hand-glass. The border may consist of any open soil, to which may be added some rough sand and leaf-soil. Leave the cuttings in this position till next spring, merely protecting them with a mat, or some Fern strewn over the hand-lights in frosty weather. When they have become well rooted and have begun to grow, lift them and transplant them a little further apart in a similarly prepared border. A sheltered position and any good porous garden soil suit the plants perfectly.

THE LIBRARY.

THE LIFE AND HABITS OF WILD ANIMALS.*

This work has been brought out in very superior style, and contains twenty first-class engravings by Messrs. Whymper, from designs by Mr. J. Wolf, illustrating various striking incidents of the lives and habits of wild animals. As a skilful delineator of such subjects, Mr. Wolf enjoys a high reputation in the artistic world, and his spirited designs in the present volume fully sustain his well-earned celebrity. To say that the engravings are the work of Messrs. Whymper is simply to state that they are produced in the very first style of art. Some pages of explanatory letter-press accompany each illustration; but the great attraction of the volume are the engravings, which speak for themselves. A specimen of these, which we give on the opposite page, represents one of the results of a falling avalanche, so common on the Swiss mountains (the native home of many of our loveliest Alpine flowers), and not altogether unknown in our own Scottish Highlands. To human, animal, or tree life, such moving accidents are terrible indeed; but the Gentians, and mountain Primroses, and Saxifrages, and their numerous dwarf allies, are as safe beneath the wastes of snow, as conservatory favourites at home, and on the very ruin of the avalanche they will, in due time, spring up and blossom as the Rose. The engraving is explained as follows:—

Slowly wending their way amongst the passes of the Scottish hills, a number of red-deer are seeking better pasturing ground. They anticipate no danger in the rocky defile, and the antlered leader of the little band moves carelessly along with lowered head, intent, apparently, only upon the eatable articles he may be able to gather. The more timid hinds frequently lift their graceful heads, and throwing their pointed ears forward, snuff the pure fresh breeze, in order to detect any danger that may be lurking near. So the deer move on, to incur a danger they are unable, with all their powers of sight and scent, to guard against. But a little distance before them, rising above the narrow ledge that forms a winding path at its base, a huge cliff towers upwards, bearing aloft a mantle of unsullied white. Harmless enough it appears in the sun-light, and gives no evidence of its speedy release from the mountain's side. Yet, as the deer approach, a few stones come hurtling down, as the snow-field begins to yield, and, as they bound from side to side the buck stops, and tossing his armed head, blows sharply through his nostrils as he gazes at the falling rocks, while the hinds crowd timidly. All is soon silent again, and the animals proceed on their way with confidence restored. As they arrive beneath the cliff, an indistinct, uncertain, murmuring sound is heard, and then suddenly, with the sound of distant thunder, the whole side of the hill seems moving towards the valley, and in a thick, tossing, fleecy clond, the snow descends upon the luckless deer. Apprised too late of their danger, with frantic leaps they endeavour to escape; but the snow-fall is all about them, and bears them to the earth with its weight. However, struggling desperately, they soon cut through the yielding mass with their sharp hoofs, and, although at first half-stunned as they emerge into the sun-light again, yet they soon gather their senses, and bound along the path, happy to have escaped such unexpected danger.

THE CRY OF THE LABOURER.†

We have read this excellent discourse with much interest, and have no doubt that its circulation will be productive of good results. Abstaining from any discussion of those points which may more properly be considered the exaggerated grievances of the "labourers-in-union," Mr. Hole clearly and eloquently shows in what matters of really vital importance "the landlord, the farmer, and the priest" have respectively failed in their duty towards them, as may be seen from the following extract:—

It is affirmed to be the duty of landlords, as owners or builders of houses, to provide dwelling-places in which men and women may live in decency and comfort. It is stated that, in many instances, the stables of the rich are far more carefully, commodiously, and expensively constructed than the habitations of the poor, and that the

* "The Life and Habits of Wild Animals." Illustrated by Designs by Joseph Wolf, engraved by J. W. and E. W. Whymper; with Descriptive Letter-press by Daniel Gaud Eliot, F.L.S., F.Z.S. London: Alexander Macmillan & Co.

† "The Cry of the Labourer against Landlord, Farmer, and Priest." A Sermon by S. W. Hole, B.D., Vicar of Campton, North. William Blackwood & Sons, Edinburgh and London, 1873.



THE AVALANCHE.

healthful condition of the beasts which perish is accounted of more importance than human life. And, while we thankfully appreciate the great improvements which have been made, and admire the efforts which, stimulated by the example of the good Prince Consort and others, have wrought a partial success, we are bound to acknowledge that, in this matter, the cries of them which have reaped are often righteous cries: that man goeth forth to his work and to his labour until the evening, and that, when evening comes, he must return to an abode which it is mockery to call a home—a hut so small, that if he has wife and children, they are crowded like sheep together, with bad ventilation, feeble light, and probably bad drainage also. What is the consequence? No people in the world love their homes more than we in England. There is no song in our language which stirs our heart more sensibly than the song of "Home, sweet Home." Be it ever so humble, if there's room to breathe freely, and live as God would have men and women live—it's home, and that's enough. But not such a place as that! What can there be but a sickly, querulous, fretful unrest in such a place as that? How can there be happiness, and peace, and love? The bravest heart must falter, and the ruddiest cheek must pale. "What's the consequence?" Why, disease both to body and soul. The man comes back, turns away, and goes—where? Where can he go? There's only one place, where there may be temptation, excess, and sin, but where there will certainly be comfort, brightness, and cleanliness. So the man is gone from the miserable wife, and the money is gone from the children, who want school-pence, and clothes, and food—and there's worse even than that. Thus huddled together, how can their boys and girls preserve the modesty, the shame, which is a glory and a grace? How can they keep innocence? How can they be pure in heart? Who can doubt that, if such wretched tenements were displaced for commodious and cheerful homes, each having its garden plot for vegetables, and fruits, and flowers (and the Government might do something, on sanitary principles, to enforce and promote such a consummation), there would be less drunkenness, less unchastity—both deadly sins—than now?

PANTON'S FLOWER GARDEN.

A RE-ISSUE of this work, which has for some years been out of print, is now in course of publication, under the editorship of Mr. Andrew Murray, at the *Villa Gardener* office, 13A, Salisbury Square, Fleet Street. We have received the first two numbers, the text and drawings of which are reproduced very faithfully.

INTRODUCTORY TEXT-BOOK OF PHYSICAL GEOGRAPHY.*

IN a former number of *THE GARDEN* we took occasion to express a favourable opinion of Dr. Page's "Advanced Text-book of Physical Geography," which is an expansion of the present work, containing precisely the same matter, with additional details and observations. The difference between the two works is not so great as might be expected from their titles, the superiority of the "Advanced Text-book" consisting chiefly in the greater number of illustrations which it contains; while all the essential points, principles, and facts relating to the subject, are presented in the smaller or "Introductory" volume. We are not surprised that it has reached a sixth edition, and we have no hesitation in recommending it as a most useful hand-book, either for the juvenile or the adult student.

Poisoning by Means of Water Hemlock.—I noticed in your issue of last week (see p. 428) that Mr. Mitchell called attention to the late case of poisoning at Falmouth. I think there are good reasons for believing that the plant which caused the mischief was not the Water Dropwort (*Eranthe crocata*), but the Water Hemlock (*Cicuta virosa*), as I have never been able to detect the *Eranthe* in that locality; and I have been informed by local botanists that *Eranthe crocata* is not found in Cornwall, but that *Cicuta virosa* is abundant in almost every shady stream in that neighbourhood, and that it always goes by the name of Water Hemlock. Specimens that I have gathered at Rilliw, near Truro, have been pronounced by competent persons to be the true *Cicuta*. If portions of the plant in question could be procured and sent to some reliable authority, the question would be set at rest. It was reported in the neighbourhood that the plant which caused the death of the children in the early part of the year was the Wild Celery (*Apium graveolens*), which is abundant by the sea around Falmouth. H. J. MURTON.

Royal Gardens, Kew.

* "Introductory Text-book of Physical Geography." By David Page, LL.D., F.G.S. Sixth and enlarged Edition. Edinburgh and London: Wiliam Blackwood and Sons. 1873.

GARDEN DESTROYERS.

RAVAGES OF INSECTS.

SOME interesting information relating to the ravages of insects was given by Mr. Napier to the House of Commons' Committee of last session on the protection of wild birds. In 1782 the caterpillars of the brown-tail moth were so numerous as to defoliate the trees of a very large part of the south of England. The alarm was so great that public prayers were offered in the churches that the calamity might be stayed. The poor were paid 1s. per bushel for collecting caterpillars' webs, to be burnt under the inspection of the overseers of the parish; and four score bushels were collected daily in some parishes. The brown-tail moth is a beautiful little white insect, about an inch in expanse of wings. Mr. Napier noticed that in 1853 it defoliated about 20 feet of a hedge near Parkstone, Poole; and in 1855 the caterpillars riddled and deprived of their leaves two Plum trees in his garden at Lewes, one of which died. The caterpillar of the gamma moth is one of the most injurious to garden plants; it principally feeds at night, and, concealing itself by day, is unperceived. The gamma moth overran France about a century ago, and devoured a very large proportion of its crops. The antler moth is sometimes extremely destructive to Grass crops. Mr. Napier once saw millions of these on the Wrekin, and in the following summer the Grass of that mountain was in a miserable state. The lackey moth is very destructive to Filbert plantations, Cherry orchards, and other tree plantations. The buff-tip, the cabbage-moth, and the small ermines are very destructive to the leaves of fruit trees and garden shrubs. But, on the other hand, the benefits derived from the labour of some insects should not be overlooked; some species feed only on noxious weeds, and others prey on still more noxious insects. One of the greatest friends of cultivators is the family of ichneumon flies, which lay their eggs in the bodies of living caterpillars, in which they are hatched, thus destroying them; although the caterpillar, after being "ichneumonized," has still a voracious appetite. The caterpillars which feed on the Cabbage eat twice their weight in a day; the larvæ of some of the fleck flies eat a much large proportion than this. Among the flies the daddylonglegs is one of the most destructive, especially in France; its larva feeds on the roots of Grass, and Mr. Napier in 1859 noticed meadows in La Manche devastated by it. The starling is a bird most useful in destroying these larvæ, and those of the horse and cattle flies. The orthopterous insects, of which the locust, grasshopper, and cockchafer, are examples, are very destructive. The numerous species of grasshoppers lessen the amount of our Grass crops. Locusts are seldom found in England now in sufficient numbers to do any damage, but they have done considerable damage here in former generations. Their greatest enemies are the starling and the rose-coloured pastor, which follow them in flocks and decapitate them by hundreds. The beetles are immensely numerous as regards species. In 1574 the cockchafers gathered in such numbers on the banks of the Severn as to prevent the working of the watermills. On another occasion in Galway they formed a black cloud that darkened the sky for the distance of a league, and destroyed the vegetation so completely that summer seemed turned into winter. They made a noise resembling the sawing of wood. The people, threatened with famine, were obliged to devour them. In 1804 they were alarmingly numerous in Switzerland. The female lays about thirty eggs; in six weeks they are hatched. They live from three to four years in the larva state. The first year they do not do a great amount of damage; but in the second year they attack the roots of all plants within their reach. They often ruin the crops of Corn, Lucerne, Strawberries, and various plants on which man depends for food. In a field of 29 acres in France about 43,000 larvæ were found—quite sufficient to destroy the entire crop during the season. Our insectivorous birds are diligent in destroying the larvæ of insects, but they will not do all that is required; hand labour is also needed. Mr. Napier is of opinion that the extensive diffusion of information on the habits and means of destroying our more noxious insects would be the means of saving millions of pounds' worth of valuable food every year. He says that in the United States the importance of this subject is felt, and almost every State has a government entomologist, whose business it is to make inspections and reports of the ravages of insects, and show the remedy. In France, government returns were published, from which it appeared that the damage done in Normandy by the cockchafer alone amounted to twenty-five million francs. A law was passed in France a few years since for the protection of birds. Not, however, that all birds are to be welcomed; the sparrow does a good deal of harm by feeding so much on green crops, and the wood pigeon does much mischief. But on the whole Mr. Napier is certain that birds do a great deal more good than harm, so that their presence in our gardens is rather desirable than otherwise.

THE PHYLLOXERA AGAIN.

WHAT the annual Hop crop is to Kent (says the *Daily Telegraph*), what the Potato crop is to Ireland, what the Rice crop is to Bengal—that is the Vine crop to the sunny land of France. We in England, where the Vine is never seen except under costly roofs of crystal, or trained tenderly against southernly walls, are apt to forget that it is upon her vine crop the prosperity of France almost entirely depends; that for her a bad year with the Vines means what a bad harvest means amongst ourselves. The reports of the French Treasury tell us that, in round numbers, there are at present under cultivation some 87,000,000 acres of Vineyard, and that these yield upon the average 1,100,000,000 gallons of wine every year; while in exceptional years, such as 1865 and 1869, the yield will amount to as much as 1,540,000,000 gallons. Some twelve or thirteen millions of money are, therefore, entirely dependent upon the prospects of the year's crop, so that when, as has been the case this season, the yield throughout the whole of the great Bordeaux district has been but a fifth of the average amount, widespread distress and considerable financial disturbance are almost certain to follow. From time immemorial the chief enemy of the French Vine grower has been frost. The early sun of spring lures the young saplings into bud, and then a single night of frost will leave acres upon acres, as far as eye can stretch, as black as if a torrent of fire had swept across them, calcining the bright fresh green of leaf and tendrils to cinder and ash. Of late, however, a new scourge has fallen on the land, the ravages of which leave far behind all the ill that has ever yet been done by frost or tempest, hail or drought. The Phylloxera vastatrix—as the little parasite is called, which is at present the curse of France—is an almost microscopic pest, of a nature closely allied to the tiny green aphid, so well-known in our English hothouses. It feeds upon the sap, the very life-blood of the young plant; and with such terrible rapidity does it multiply that it has, within the last eight years, laid waste close upon four million acres of French Vineyards as effectually as if the breath of a furnace had passed over them. The Government has offered large rewards to any one who will discover how to stay the pestilence. Chemists, naturalists, practical men, have been trying remedy after remedy, and yet the plague was, until lately, not only unabated, but actually threatening to increase. The list of remedies which are reported as having been tried without effect sufficiently speaks to the serious nature of the evil. Chemistry has emptied out her vials. All the most active disinfectants have been tried in vain. Experiments have been made with carbolic acid, with coal tar, and with creosote, with petroleum and naphtha, with chloride of lime and with quick lime, with sulphur and sulphide of lime and sulphurous acid, with arsenic and arsenious acid, and with that most fetid of all chemical compounds—the sulphuret or bisulphide of carbon. Of the results to be obtained from the application of this last drug considerable hopes were at one time entertained. The bisulphide of carbon will kill anything; therefore, it was argued, it ought to kill the phylloxera. Holes were dug at the roots of the trees, the abominable poison was poured in, the hole was covered over with fresh earth, and the noisome vapour was left slowly to escape. The cure unfortunately proved worse than the disease. The poisonous fumes of the bisulphide killed the phylloxera off, as might have been expected; but with the phylloxera they also killed off the Vine itself, corroding and eating out the very life, shrivelling the wood, nipping and searing tendrils and bud, and bleaching the tender leaves. Chemistry, with her thousand and one resources, being thus powerless, an attempt—equally unsuccessful—has been made to stamp out the disease with fire. Huge pyres have been erected, and the tainted plants have been plucked out and burned—root, bud, branch, pest, and all—in one vast blaze. Water, too, has had its advocates; and, wherever water could be got in sufficient quantity, the Vineyards have been flooded in the vain hope of exterminating by drowning the noxious pest, whether in the state of egg, cocoon, or perfect insect. All these cures have alike signally failed. The only attempt that has at all approximated to success has been that of those who have strewed the ground round the diseased plants a foot deep with green Tobacco leaves—a plan incapable of application upon any large extent, as, to carry it fully out, every acre of Vineyard would require at least a corresponding acre of Tobacco, so insensible is the phylloxera even to Tobacco itself—the deadliest poison known to the whole insect world. At last, however, when Vine-growers, wine-makers, and exporters were in despair, a M. Planchon, a French naturalist, resolved to pay a visit to America, whence, it is now pretty well ascertained, the noxious phylloxera was first imported into France about eight years ago. The pest exists, argued Planchon, in Missouri and Illinois, and yet is there of so little importance, that even in the years when it is most active and most mischievous, it does not perceptibly affect the average of the crop. Obviously, then, some cause must be at work in America—some condition must there

exist which is wanting in France; and, if once it can be found out, the problem will be forthwith solved which has been vexing France for nearly three years. Here was a journey undertaken in the true spirit of science; and it is gratifying to know that M. Planchon's labours have been, so far as can be told at present, crowned with success. "It is small birds," will cry at once the disciple of Mr. F. O. Morris, who knows that in France the indiscriminate practice of what is known as *le sport* has left the country almost featherless, until, for mile after mile, not a wing flutters, nor a tiny "tweet-tweet" is heard. "No," is the answer. M. Planchon's discovery is not this, although very like it. It is not the nesting sparrow he presses into his service, but the nesting acarus—a species of American "plant lion"—which lives upon the phylloxera, hunts it down, pursues it from leaf to leaf, drags it out of the crannies in the bark, burrows after it into the underground lairs, where it lies hid in winter, sucking the sweet juices from the root—seizes it, fastens upon it, sucks its blood as a spider sucks a fly, throws aside the shrivelled carcase, and rushes off at once with insatiable ferocity in quest of a fresh victim. It is the old story of Columbus and the egg over again. The thing is simple enough, when once we know the trick. France, to her sorrow, imported the phylloxera, but did not with it at the same time import the acarus—much as Australia has imported the Thistle but not the goldfinch, the rabbit but not the stoat and fox. M. Planchon's joy when the secret first opened itself to him—when closely watching the infected Illinois Vines, he saw the acarus chasing his prey from leaf to leaf—can be easily imagined. Here at last was the wished-for physician—the tiny little creature who was to sweep the Vineyards of fair France as clear of their terrible pest as the hedgehog sweeps the English kitchen of its swarms of cockroaches. With trembling hand were specimens of the little "bug" collected; with tender care were they placed in huge chipboxes, and supplied with their favourite food; with delight almost extravagant were they first exhibited at the Académie des Sciences, and then turned out to fight the good fight in the devastated Vineyards, wherein, if they do not thrive and multiply, it will not be, at any rate, for want of a sufficient supply of their proper food.

Poisonous Plants and Insects.—Many persons are very susceptible to the poisonous influences of vegetable substances; and poison Ivy and poison Oak are highly injurious to the skin, and produce excessively painful sores. When the burning and itching first commence, if the skin is painted with a thick whitewash, made out of a handful of unslacked lime dissolved in just enough water to form a substance that will cling to the flesh, these sores will subside very quickly. Often one application is sufficient, but if not, put it on two, three, or more times, until the lime kills the poison entirely. If the skin has become broken, however, this remedy may be too severe, but a salve, made by pouring liquid ammonia into sweet oil, stirring it rapidly until it forms a thick paste, and then applying it on a cloth to the surface, will extract the poison. For curing the stings of bees, hornets, and spiders, common fine salt, and bicarbonate of soda, in equal parts, is the best remedy. Rub the powder well into the bite, and repeat the application, if the pain does not cease. If the soda is not at hand, soft soap, made of wood-ashes, will often cure the pain. Saleratus, moistened to a paste and rubbed into the sting, is also a good remedy. The poison of these insects is of an acid nature, and an alkali applied directly to it, before the blood has absorbed much of it, is very efficacious.—J.

To Destroy Ants, Bugs, &c.—No insect which crawls can live under the application of hot alum water. It will destroy red and black ants, cockroaches, spiders, chintz bugs, and all the crawling pests which infest our houses. Take 2 lbs. of alum and dissolve it in three or four quarts of boiling water; let it stand on the fire until the alum is all melted; then apply it with a brush while nearly boiling hot, to every joint and crevice in your closets, bedsteads, pantry shelves, and the like. Brush the crevices in the floor of the skirting or mop boards, if you suspect that they harbour vermin. If in white-washing a ceiling, plenty of alum is added to the lime, it will also serve to keep insects at a distance. Cockroaches will flee the paint which has been washed in cool alum water. Sugar barrels and boxes can be freed from ants by drawing a wide chalk mark just round the edge of the top of them. The mark must be unbroken or they will creep over it, but a continuous chalk mark half an inch in width, will set their depredations at naught. Powdered alum or borax will keep the chintz bug at a respectable distance, and travellers should always carry a bundle of it in their hand bags to scatter over and under their pillows in hotels, &c. While staying at an hotel once, with a party, most of whom complained sadly of the nightly attacks of these disgusting insects, I was able to keep them entirely at bay by its use, and I distributed the contents of my bundle among the party, to their great relief.—*Cultivator*.

THE KITCHEN GARDEN.

PRESERVING CELERY IN COLD COUNTRIES.

Now that winter is approaching, we repeat the process by which we have Celery well preserved and easily accessible at any time in winter, but especially towards spring. It is set out early in summer in shallow trenches, one spit in depth, the object of which is to afford a rich bed to start the young plants, and to allow a slight hilling of earth in autumn, to put the plants into good shape for removal, by compressing the stalks together. Fig. 1 is a cross section of the trench, showing the slight earthing up, and the enriched earth (by the darker colour) in the trench below. Late in autumn they are taken up for their winter quarters. A dry, sheltered, low place is selected for this purpose, where water cannot stand in the sub-soil, and where the covering of leaves will not be likely to



Fig. 1.



Fig. 2.

be blown off. The advantage of a low place is that the depression in the surface protects the covering from wind, the earth does not freeze so deep, and the snow, drifting in, serves as an additional protection. But any spot, nearly or quite as good, might be selected under the shelter of evergreens, with a tile for drainage if necessary. A narrow trench is first dug, with a depth just equal to the whole length of the Celery plants. It should not be much wider than the spade, so that the plants may be in near contact with the earth walls, and receive their protection and moisture. A day is selected for the removal of the plants when their stalks and leaves are dry or free from water. They are taken up carefully with the roots, and without a great deal of earth adhering, as the plants will get nearly moisture enough from the earth at the sides. They are closely and compactly, without bruising, placed upright in the trench, roots downwards, and when the trench is filled, the earth is carefully pressed against the sides at the top, leaving a small portion of the upper leaves uncovered, fig. 2.

A thin protection of leaves, according to their need, is then placed upon them. Those intended for use in the early part or middle of winter may be taken up early in November, and, being entirely excluded from light, will be well blanched by the time they are wanted; but those for late winter and spring use may remain till the middle or latter part of November before trenching, or as late as freedom from the danger of hard frosts will permit. The plants will endure a moderate frost without injury, provided they are not disturbed till they have thawed. The plants which are trenched early in November need only a thin covering of leaves until December cold arrives, when the covering is increased, and, as colder weather advances, it is added to until it is nearly a foot thick. The leaves are prevented from blowing off by a very slight

covering of brush, if the locality is low or sheltered by evergreen trees. In more exposed places they may be held on by double rows of short evergreen branches, set on opposite sides like the roof of a house (fig. 3), or by a wide board placed on edge on each side.

If danger is apprehended from mice, the spot selected should be in a cultivated and clean piece of ground, and a



Fig. 4.

smooth, clean bank of fresh earth raised all around the trench, which will prevent the ingress of these animals, which will not burrow under snow up an ascending surface of smooth beaten earth. The embankment thus made will serve also to hold the leaves—fig. 4. It will be seen that the Celery may be readily got at any day in winter, by merely lifting the loose leaves.—*The Cultivator*.

RED BEET.

THIS useful and wholesome root is easy enough to grow anywhere, and on any kind of soil, so long as it is sweet and well pulverised. It should not be heavily manured or the roots will grow too coarse, and be ill-flavoured, and not so rich in colour. To prevent this, grow the plants pretty thickly if the ground is rich, and if the soil is heavy, stiff, and cold, ridge it, by all means, and sow on the ridges, which should be 2 feet to 2 feet 6 inches apart. Thin but moderately, to get nice-sized roots of a good dark colour. Take them up in November; sort out and lay in those selected, as they are always best when taken fresh from the ground. Store away such as are selected for use, by laying them in thickly in rows, in a sheltered quarter, casting the earth up entirely over their roots to the neck of the leaves. When frost sets in, protect with litter, Fern, evergreen boughs, dry leaves, or any like material. The varieties of Beets have been much improved during the last forty years, and are now become very numerous. The best are the Dwarf Red, The Chelsea, Nutting's, Pine-apple, Cattel's, and Dell's Crimson. All should be sown in April. The white or silver kinds are sometimes useful in a very dry summer, the leaves being picked and used as Spinach; and in autumn their crisp white stalks are a good substitute for Seakale. The Chilian is much used as a decorating plant, the leaves being finely variegated with a variety of rich colours.

JAMES BARNES.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Converting Weeds into Manure.—A really method of utilising weeds and garden refuse so as to convert them speedily into valuable manure, consists in laying them in a trench in successive layers, with unslaked lime between, and then covering the whole with earth.

Sawdust for Clay Soils.—The action of sawdust is mainly indirect. It can add to the soil very little which crops require and do not already find, but the wood particles act well on clay lands to keep asunder the sticky clay particles, and thus lighten the earth, while the humic acid and carbonic acid formed by decay, dissolve the rock-dust and prepare its elements to nourish the crops. There are soils which would be greatly benefited by these results of the action of sawdust, and there are others upon which all the labour of spreading such material would be thrown away. Where stable-manure will do good, we may reasonably anticipate benefit from sawdust.—S. W. JOHNSON.

Hollow Celery.—I shall be very glad to see the question put by "W. C.," of Whitehaven, upon Celery becoming hollow clearly answered. I have this year grown Sandringham White, Coles' Crystal White, and Ivory's Nonesuch Red, but with the same result as "W. C." I do not think one plant out of ten is good for anything. I remember having read that if Celery was raised on heat it would become piped or hollow. I grew my seed in a gentle heat until the plants were large enough to prick out into boxes, and then I hardened them off. I should like to know how "W. C." grew his; and whether the raising on heat has anything to do with the evil of which we complain.—HENRY SMALLMAN, *West Green*. [As regards kinds, Mr. Smythe, Elmham Hall, recommends Veitch's Silver White and their incomparable White. W. H. C. (whose name and address we possess), says that his experience is wholly in favour of Wright's White Grove.]

WORK FOR THE WEEK.

PRIVATE GARDENS.

Ferns.—These should now be in a state of rest, which is better secured by a low temperature than by absolute dryness. A temperature of from 55° to 60° minimum is sufficient for the stove varieties, and the exclusion of frost for the greenhouse ones. Those that are producing young fronds should be kept at the warmest end of the house, and must at no time lack water. Tree-Ferns, too, must always get a supply, for the surface-soil about them frequently presents a moist appearance, when beneath it is injuriously dry. Only cut away fronds that are quite dead, for, as long as they contain life, they contribute support, and more particularly are they required at this inactive period. British, American, and other hardy Ferns grown in pots should be placed in frames, on back stages in greenhouses, or plunged out of doors where water cannot lodge about them. Now is an excellent time to clean the plants of thrips and scale, for, when the plants have been thoroughly freed from these pests, the young growths come up vigorously, and have a much better chance for development than when the old fronds are infested with these insects. Fumigating the Ferneries, too, may now be beneficially practised, even more so than in summer, because the fronds in winter are harder and better ripened than they are in summer, and are consequently not so liable to injury. A good stock of young Ferns should be kept in a brisk moist temperature for supplying cut fronds, for furnishing purposes, and for filling ornamental baskets. When spores have germinated and made a little progress, they should be pricked off in small patches at first, and afterwards, when the Ferns form a few fronds, the plants may be potted separately. Club Mosses also form good decorative subjects, the small kinds like *denticulata*, *Kraussiana*, and *delicatissima* being available for edgings, and the larger ones, like the varieties of *formosa*, *Africana*, *inequalifolia*, and others, make good substitutes for Ferns when kept growing, but when cut they soon fade. They may likewise be kept growing all through the winter, for as they grow so quickly, and can be propagated so readily, there is no necessity for resting them. Although they like plenty of water, even in winter, stagnant moisture is dangerous.

Orchids.—There is a great variety of these in bloom at present, and amongst them the following are, perhaps, the best: *Oncidium Rogersii*, *orthorhyncum*, *flexuosum*, *Papilio*, and *crispum*; *Odontoglossum Alexandræ*, *bictoniense*, *Uro-Skinneri*, *gloriosum*, *læve*, *pulchellum*, *nebulosum*, *grande*, and *blandum*; *Zygopetalum Mackayi*, and *maxillare*; *Dendrobium moniliforme*, *chrysanthum*, and forced plants of the noble; *Cypripedium barbatum*, *Veitchii*, *Dominianum*, *concolor*, *insigne*, *longifolium*, *veillarium*, *villosum*, and *Sedeni*; *Cymbidium Mastersii*; *Vanda cœrulea*; some *Cattleyas*, *Lælias*, *Barkerias*, and *Angræcums*; *Calanthe vestita* and *Veitchii*; *Goodyera discolor*, *Masdevallia tovarensis*, *Mesospinidium vulcanicum*, and many others. Most of the plants in the East Indian department will now be approaching a state of rest, therefore, a night temperature of 65° will be sufficient, with a rise of 10° by day. Lessen the supply of water to the roots in general, but at no time leave the roots or atmosphere without a moderate supply. Never permit Orchids to shrivel for want of water, particularly *Vandas*, which are apt to lose their foliage when kept too dry, thus impairing their health and appearance. Give plenty of water to *Calanthes*, and, if possible, never allow their blooms or those of any of the other Orchids to get wet, or they will spot and soon decay. Keep plants of *Cœlogyne cristata* at the end of the house where there is most atmospheric moisture, and give them plenty of water, but do not spill it about their rising flower-spikes. *Cypripediums*, *Lælias*, *Zygopetalums*, *Oncidiums*, *Odontoglossums*, &c., coming into flower, should be placed at the warmest end of the Mexican house, until they come into bloom, when they ought to be removed to the cooler end, so as to prolong their period of flowering. A temperature of from 50° to 55° at night is sufficient for these. Pleiones that have done blooming, should now be re-potted at once, using a mixture of Moss, peat, loam, and sand, in well-drained pots. Give them plenty of water, and a position in the *Cattleya* house. Sponge over the leaves of *Vandas*, *Angræcums*, and other Orchids, so as to keep them clean from insects, which can only be done by continuous attention.

The Flower Garden.—No favourable opportunity should be lost in bringing to a completion what planting may yet remain undone, and in dry frosty weather execute all intended alterations. Such weather is also favourable for wheeling soil, manure &c. Lay turf, and attend to levelling and otherwise repairing lawns when the weather is open. Nothing imparts a greater charm to a garden in winter than perfect neatness and cleanliness, with smooth turf, and walks so formed that water never remains upon them. Frequently roll Grass and walks, and remove every particle of decaying matter from beds and borders. Lay Box edging; prune, nail, tie up, or otherwise train all

hardy deciduous climbers, and take advantage of frosty weather to collect and turn compost heaps for manure. If bulbs for early blooming are not yet planted, make it a rule to plant nothing without a green groundwork of some kind to cover the soil. *Arabis*, *Aubrietias*, *Violets*, *Sedums*, *Saxifragas*, *Daisies*, *Primroses*, *Forget-me-nots*, and similar plants are admirably adapted for this purpose.

Herbaceous Plants.—Outdoor plants in bloom are very scarce during the present month, and consist chiefly of Christmas Roses, a few *Chrysanthemums*—as most of them that have not been protected have been destroyed in a great measure by frost—*Pansies*, *Laurustinuses*, *Jasminum nudiflorum*, *Cydonia japonica* (just beginning to expand), and a few others. Cut down *Chrysanthemums* when they have done flowering, and protect their roots by means of a layer of coal-ashes. Indeed, coal-ashes are very useful for this purpose in general with herbaceous plants as a protection from frost, wet, and slugs, and they have always a neat and tidy appearance. Do not dig amongst this class of plants at present, merely cut away all decayed stems, strew some leaf-soil or ashes over their crowns, clean the ground about them, and leave all undisturbed till early spring. Where any improvement is intended, do not hesitate to accomplish it as long as the weather is favourable, for the more that is done in this way in winter the less will there be to do in the busy season of sowing and transplanting in spring. Many little alpine and choice herbaceous plants are grown in frames in winter, chiefly to protect them from the excessive wet and changeableness of our climate, and to form specimens. These pot plants only require immunity from wet, plenty of ventilation, a cool temperature, and shelter from very hard frost.

Shrubberies.—Proceed with the transplanting of deciduous trees and shrubs, having previously made good and substantial preparation for them in the way of adding fresh turfy loam to impoverished soil, also leaf-mould and decayed manure if a speedy growth is required. If a plantation is to be made, the ground should be deeply trenched; and, unless otherwise protected by large neighbouring trees, Larches and other quick-growing subjects may be planted temporarily amongst those that are to remain permanently, and cut away before they are likely to injure their nurslings. If trees are to be planted where others of a similar kind have long been grown, the addition of some good and fresh soil to the ground is almost a work of necessity. In planting mixed groups, use ornamental flowering-shrubs as well as picturesque and stately objects, and be not reluctant to thin out any over-crowded plantations, for delay is suggestive of continual disfigurement. Think well of the distances trees should be planted apart, so as to effect a full and free development; and, rather than have them too close, insert temporary and decorative "makeshifts" between them. Another great point to be observed is to plant a tree at once where it is to remain, as future shiftings are productive of checks in growth, and frequently also of loss of limbs. Conifers and other evergreens may safely be transplanted at this season, although spring is the recognised season for the former, and autumn for the latter; yet circumstances sometimes compel their removal at any time during the winter. Dig away layers from Limes, Maples, Planes, Poplars, and other deciduous trees; dress them, and transplant them in nursery lines, there to remain for a year or two. Some of the prunings from them, and also from established trees, may be cut up into pieces about 6 or 8 inches long, and used as cuttings. Place these in a sheltered border, in which some leaf-soil and sand has been mixed. Prune out dead branches from all trees, and encroaching growths from deciduous ones; but do not prune the live wood of evergreens till spring.

Roses.—Transplanting may now be done with advantage; and if new kinds have to be procured, the sooner they are got and planted now the better. Before planting, however, take care that the stations for them are properly prepared by removing part, if not the whole, of the old soil to the depth of 18 inches, and replacing it with fresh compost of the proper kind. Everyone knows that the Rose delights in a strong soil, and that it will take any reasonable quantity of rich manure. Hence each variety, after it is planted, should be mulched with rotten dung; and the beds will also be all the better for a similar dressing. When planting, make the plants secure by means of stakes. But do not prune, beyond cutting off the points of straggling branches, until frost has left us. Some of the more tender kinds of Tea and Bourbon Roses may require protection; dwarfs may be pegged down and covered with dry Fern. A handful of dry Fern fronds drawn into the head of a standard Rose, and well secured, is not a bad protection, that is, if the snow is not allowed to lie or melt and run into it. Dryness is the point to be attained. In some localities it may be requisite to lift Tea Roses and place them under protection for the winter. Buds of Tea-scented and other tender sorts should be protected from frost by fastening some straw or Broom twigs to the stocks so as to cover them. Composts should be ridged so as to get well frozen and pulverised, if required

for potting purposes. Prune spring-flowering pot Roses, and keep them out of doors a few weeks yet, unless the frost is very severe. Do not prune the latest-blooming Roses for a few weeks yet. Some of the pot Roses, however, may be potted and their shoots tied down, started into growth in gentle moist heat, damping them once or twice a day with the syringe. Should Roses be required earlier, they should have been ripened, pruned, and potted before October, and then started into growth.

Outdoor Plants Requiring Protection.—Of these there are some in most gardens, and the degree of protection which they require depends greatly on the situation, exposure, and condition of the soil in which they are grown. *Chamærops Fortunei*, if overshadowed by trees on a dry basis, may stand the winter unprotected, but, if exposed, the leaves should be gathered together, not very tightly, and enveloped in canvas while winter weather lasts. If mats or other thick materials are used, they must be removed when the severity of the season is over. Fig trees, Loquats, Myrtles, Sweet Bays, *Dracæna indivisa*, *Fremontias*, some tender kinds of Roses, hybrid Clematises, Pomegranates, *Edwardsias*, Magnolias, *Ceanothuses*, and some other plants grown against walls should be covered with a thin thatch of Fern, Straw, and Broom, or mats, oiled canvas, or other material may be effectively employed for the same purpose. Pampas Grass and *Tritomas* are all the better for having some leaves placed around their base and held in position by means of soil or branches. New Zealand Flax, *Acanthus Candelabrum*, *Gunnera scabra*, and similar plants also like a layer of ashes and leaf-soil placed around their base to preserve them from frost. *Veronica Andersonii* and a few small plants also need protection when the winters are severe, and a layer of ashes over their roots, and some sprays of Broom stuck in amongst them, afford the necessary shelter. Hybrid *Rhododendrons*, Roses, and many other plants may have their roots protected by means of a mulching of litter or leaves, but care must be exercised that the mulching does not touch the bark of the stems. For newly transplanted trees and shrubs a similar mulching is beneficial. Canna, Dahlia, and Japanese Lily roots left in the ground should likewise be mulched, as should also *Fuchsias*, *Erythras*, and a few other plants.

MY WINTER GARDEN.

I PREFER, to any glass roof which Sir Joseph Paxton ever planned, that dome above my head some three miles high, of soft dappled grey and yellow cloud, through the vast lattice-work whereof the blue sky peeps, and sheds down tender gleams on yellow bogs, and softly-rounded Heather knolls, and pale chalk ranges gleaming far away. But, above all, I glory in my evergreens. What winter-garden can compare for them with mine? True, I have but four kinds—Scotch Fir, Holly, Furze, and the Heath; and, by way of relief to them, only brows of brown Fern, sheets of yellow bog Grass, and here and there a leafless Birch, whose purple tresses are even more lovely to my eye than those fragrant green ones which she puts on in spring. Well, in painting, as in music, what effects are more grand than those produced by the scientific combination, in endless new variety, of a few simple elements? Enough for me is the one purple Birch; the bright Hollies round its stem sparkling with scarlet beads; the Furze-patch, rich with its lacework of interwoven light and shade, tipped here and there with a golden bud; the deep soft Heather carpet, which invites you to lie down and dream for hours; and, behind all, the wall of red Fir-stems, and the dark Fir-roof with its jagged edges a mile long, against the soft grey sky. An ugly, straight-edged, monotonous Fir-plantation? Well, I like it, outside and inside. I need no saw-edge of mountain peaks to stir up my imagination with the sense of the sublime, while I can watch the saw-edge of those Fir peaks against the red sunset. They are my Alps—little ones it may be; but, after all, as I asked before, what is size? A phantom of our brain—an optical delusion. Grandeur, if you will consider wisely, consists in form, not in size; and to the eye of the philosopher, the curve drawn on a paper two inches long is just as magnificent, just as symbolic of divine mysteries and melodies, as when embodied in the span of some cathedral roof. Have you eyes to see? Then lie down on the Grass, and look near enough to see something more of what is to be seen, and you will find tropic jungles in every square foot of turf, mountain cliffs and *débâcles* at the mouth of every rabbit-burrow, dark strids, tremendous cataracts, “deem glooms and sudden glories,” in every foot-broad rill which wanders through the turf. All is there for you to see, if you will but rid yourself of “that idol of space;” and Nature, as every one will tell you who has seen an insect dissected under the microscope, is grand and graceful in her smallest as in her hugest forms. The March breeze is chilly, but I can be always warm if I like in my winter-garden. I turn my horse’s head to the red wall of Fir-stems, and leap over the Furze-grown bank into my cathedral, wherein if there be no saints, there are likewise no

priestcraft and no idols; but endless vistas of smooth red green-veined shafts holding up the warm dark roof, lessening away into endless gloom, paved with rich brown Fir-needle—a carpet at which Nature has been at work for forty years. Red shafts, green roof, and here and there a pane of blue sky—neither Owen Jones nor Willement can improve upon that ecclesiastical ornamentation—while for incense I have the fresh healthy turpentine fragrance. There is not a breath of air within; but the breeze sighs over the roof above in a soft whisper. I shut my eyes and listen. Surely that is the murmur of the summer sea upon the summer sands in Devon far away. I hear the innumerable wavelets spend themselves gently upon the shore, and die away to rise again. And with the innumerable wave-sighs come innumerable memories, and faces which I shall never see again upon this earth. I will not tell even you of that, old friend. It has two notes, two keys rather, that *Æolian* harp of Fir-needles above my head; according as the wind is east or west, the needles dry or wet. This easterly key of to-day is shriller, more cheerful, warmer in sound, though the day itself be colder; but grander still, as well as softer, is the sad sighing key in which the south-west wind roars on, rain-laden, over the forest, and calls me forth—being a minute philosopher—to catch trout in the nearest chalk-stream. The breeze is gone awhile, and I am in perfect silence—a silence which may be heard. Not a sound, and not a moving object—absolutely none. The absence of animal life is solemn—startling. That ringdove, who was cooing half a mile away, has hushed his moan; that flock of long-tailed titmice, which were swinging and pecking about the Fir-cones a few minutes since, are gone; and now there is not even a gnat to quiver in the slant sunrays. Did a spider run over these dead leaves, I almost fancy I could hear his foot-fall. The creaking of the saddle, the soft step of the mare upon the Fir-needle, jar my ears. I seem alone in a dead world. A dead world, and yet so full of life, if I had eyes to see! Above my head every Fir-needle is breathing—breathing for ever; currents unnumbered circulate in every bough, quickened by some undiscovered miracle; around me every Fir-stem is distilling strange juices, which no laboratory of man can make; and where my dull eye sees only death, the eye of God sees boundless life and motion, health and use.—“*Poet’s Hyls*,” by Charles Kingsley (*Mer. Illus.*).

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

THE beginning of the end of the society is at hand, but whether it be this year or early in next I know not. The “ins” and the “outs” are disagreeing, and with the Royal Commissioners to pull the strings, the worst enemies of gardening could scarcely wish horticulture, so far as it is represented by the Royal Horticultural Society, to be in a more precarious state. With neither party have I any sympathy. A blunder from the day the scheme was first propounded, no amount of patching can now remedy it, and the more that is expended the further, necessarily, must the scheme be from success, in fact, you might as well try to convert Covent Garden Market and its precincts into a garden for the supply of London, as South Kensington into a garden of representative horticulture. All the skill in the world cannot press plants into healthy existence in such an atmosphere. They sigh for the country, and nothing but the country can give them real cultural life. The arcades at South Kensington are little better than catacombs. But convert the bricks and mortar into glass and iron, and you have immediately the finest winter promenade in Europe, the climate of Madeira at our doors, and a sanatorium which thousands would appreciate. But, unfortunately, a society, already on the verge of bankruptcy, cannot indulge in such changes, nor would it be right to do so, if it could, the object not being in accordance with that oft-paraded scare-crow—the Charter. It may, however, be a hint for the commissioners, and a means of making ends meet when the garden is, as it inevitably must be, thrown upon their hands. Then Mr. Wilson’s guinea subscribers may be crowded in by the thousand, the Horticultural Society, freed from the cost of maintenance, may hold its periodical exhibitions there, and then, perhaps, it may be possible to infuse as much public spirit into them as once obtained at Chiswick, and which now exists in many of our northern provincial towns. I should, however, in the event of a severance, object most decidedly to the society taking the furnishing department, as I believe it would be better and more cheaply done in the open market. Besides, the object would not be horticultural, and, with reduced means and the small garden at Chiswick, the society should not undertake anything except what is strictly legitimate. The society should not, in my opinion, patch up the old feud with the commissioners. The garden is, has been, and always will be, a dead weight upon the resources of the society, a dead weight which it is impossible to balance. If the garden is wanted for the purposes

of the International Exhibition and the surrounding neighbourhood, let the commissioners pay for it; but let us, as gardeners, have done with gardens which only serve to demonstrate how powerless we are to contend with circumstances over which we have no control. To resuscitate the society on a proper basis, or to found a new one, the writer himself, or through his executors, will be glad to make one of hundred who will undertake to give £10 a year for ten years, thus making a gift of £10,000. This would be sufficient to form a new society, or to support the old one, which, set clear on its legs, would be ample for the maintenance of Chiswick in an efficient state. I throw out these statements with the utmost confidence, and if the spirit in which they are written can be realised by others, the future of the Royal Horticultural Society will not be dependent upon the Royal Commissioners. There is room enough for a really efficient horticultural society, but let us be rid of the red tape and circumlocution of the past, before we launch another venture. AN OLD EXHIBITOR.

Will you allow me to make another suggestion? Should the re-constitution of the society be carried out, we may expect to get back an important class of fellows, those who, during a long course of years, owing to some actual or believed cause of offence or neglect, have left the society. When asking some of the most influential horticulturists to join us in the "appeal," "Not a fellow" was the answer, and this from two of the body who are much looked up to and respected, and among our greatest exhibitors. One of them gave the reason, "We were badly treated, and left the society." I think with a re-constituted society we may count on old scores being considered as wiped off. The country has expressed its approval of the guinea plan as thoroughly, and almost more promptly, than I expected. I will ask you to print a thoroughly representative letter from Mr. Alderman Buchan; having been Mayor of Southampton from 1871 till 1872, and having a large collection of Orchids, his name carries weight in his district. I obtained permission that his letter should be printed. It was a great comfort to see one of our most distinguished horticulturists, Mr. Ellacombe, of Bitton, speaking out in your last number. I have only to add that it is to be hoped that all the country fellows of the society will sign the paper which has been circulated in order to gain the power of voting by proxy.

GEORGE F. WILSON.

(Copy of Mr. Buchan's letter.)

8, Cranbury Place, Southampton.

SIR,—I have read your letter with much interest, and as I agree with your facts, you may consider I will be a guinea subscriber, if it should be so decided. Living, as I do, so distant from London, it would be simply a waste of money to subscribe (according to the present rule) five [four] guineas a year, particularly as the advantages to be obtained are not commensurate. I feel sure if a guinea subscription were adopted, it would greatly popularise the society, and considerably enhance its funds. As far as I am concerned, I may not possibly attend one show, but still I approve of the principle, and, being a great lover of horticulture, particularly of Orchids, of which I have a large number, I wish to do all I can to induce the public at large to imbibe the same taste. Excuse my addressing you, but as you have made yourself public property by advocating so good an alteration to benefit the Horticultural Society by the publication of your excellent letter, I could not refrain from troubling you.

(Signed)

H. J. BUCHAN.

G. F. Wilson, Esq.

MR. WILSON'S proposal on the subject of the Royal Horticultural Society, will, I believe, be received with pleasure by hundreds of gardeners, amateur and professional, who, like myself, have neither the means nor inclination to belong to it as at present carried on. I would, and I believe many others would, gladly join at once, if it was reorganised as Mr. Wilson proposes, and I cannot but think that a society, composed of real lovers of horticulture, would do more to advance the interests of the science than a society of which at least half the fellows neither know nor care anything about it. I think Mr. Ellacombe's letter in *THE GARDEN*, of November 29th, fully expresses the feelings of a large class of country gardeners, and if all those willing to join as guinea members will send in their names to Mr. Wilson, or to any committee appointed to receive them, he will soon know what support is likely to be afforded to his plan. It seems to me that one of the most important objects for a horticultural society to carry out should be the trial of the innumerable varieties of fruits, flowers, and vegetables which are constantly being brought out, and of which a great proportion are either not worth growing or not distinct from older varieties. It is next to impossible for any human being to know, or to grow more than a very small number of the varieties of fruits and flowers, which swell our nurserymen's catalogues to such alarming proportions, and if two-thirds of them were utterly destroyed and driven out of cultivation, I believe both nurserymen and gardeners would be immense

gainers. The present system of certificates is all very well, but if given without a trial half their value is lost; and how is an unfortunate amateur, who can only go by hearsay, to make a selection from a list of, perhaps, a hundred varieties of Fuchsias? if he finds that forty of them have first-class certificates. Another work that should be done by a horticultural society is the introduction, and distribution to members who choose to pay for them, of the numerous and beautiful plants, which, though grown in many gardens fifty years ago, are hardly now to be found in cultivation. The employment of a couple of energetic collectors ought to repay a society well, and would add to our gardens many new and rare plants which are generally neglected by nurserymen.

H. J. ELWES.

Miserden House, Cirencester.

LEAF PRINTING.

I HAVE read with much interest Mr. J. F. Robinson's remarks on this subject in your last issue, and hope to profit by his directions. My object now, however, is to give some account of a simple process by which clear and truthful impressions of leaves and Fern fronds may be obtained with little trouble and expense. The leaves to be printed from must be well developed, and perfectly dry. Then get a small can of printer's or proof ink, which can be bought for a few pence at any shop where wood-engravers' materials are sold. Take a bit of ink about the size of a pea and work it on a small piece of slate or glass with a leather dabber, or the ball of the hand; now give the leaf a thin coating of ink, being careful to spread it equally, not to dab it on in blotches, or the clear effect will be lost. Having applied the ink, take a small sheet of soft white paper and lay the leaf, ink downwards, upon it, placing it between the leaves of an old book, which must then be subjected to a moderate pressure in a copying press. If a press is not at hand, lay the book on the floor and stand upon it for a few seconds, an operation which answers the same purpose. Impressions can be taken with greater rapidity by this process than by any other with which I am acquainted, and a very little practice will enable anyone, possessing ordinary ingenuity, to succeed in producing them. Soft book paper is the best for the purpose, and, previous to using it, place a few sheets of it between damp blotting paper, which causes it to take the ink still more readily, though fair impressions may be got by using fresh carbonised paper, such as is used in manifold note-books, instead of ink, still I prefer the latter as being better in practice than carbonised paper. B.

MR. JAS. F. ROBINSON'S paper on leaf-printing prompts me to send you the following:—I feel reluctant to criticise his communication, but his processes are all fully twenty years out of date; they, together with many others, were practised, and frequently lectured upon, by me prior to 1853, and I have now before me specimens of leaf-printing exhibited in that year by a better, more convenient, and even cheaper process than his so-called "best." Most papers are now salted, for a silver solution of thirty-five grains per ounce, and one of a drachm (or sixty grains), is wasteful and unnecessary; his results must, of necessity, be all "negative," the tint and tone peculiar and objectionable, permanence doubtful, and the beauty they possess due rather to the natural perfection of the specimens and artistic arrangement of them than to the methods he recommends for reproduction and record. His mechanical and manipulatory arrangements are equally at fault; to use two glass plates, held by wooden clips, is open to several objections. Properly constructed pressure frames, with hinged back and brass springs can now be obtained from 7s. per dozen ($4\frac{1}{2} \times 3\frac{1}{2}$) and upwards, according to size. To attempt to work in "gloves" is sure to cause embarrassment, make the processes difficult and annoying, and, moreover, almost ensures stains and other little accidents. When I have leisure to do so, I shall be happy to communicate the way in which I manage my leaf-printing. WASHINGTON TEASDALE.

Improvements in Hyde Park.—Under the orders of the First Commissioner of Works and Public Buildings the entire length of the drives, extending on the one side from Hyde Park Corner to the Albert Memorial, and on the other side from Hyde Park Corner to the Kensington Gardens Bridge, crossing the Serpentine on the other side, has been re-covered with macadam, and rendered smooth and level by the aid of a heavy steam-roller. New mounds have been constructed at the roots of the various clumps of trees, and the borders extending the whole length have been re-turfed. The ride in Rotten Row has been re-laid with fresh gravel and red sand, and the general appearance of the park has been much improved. The approaches to the Albert Memorial have also been considerably altered to meet the wants of the great numbers who, especially on Sundays, visit the spot.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

DECEMBER 3.

THIS meeting, the last for the present year, was remarkable for the magnificent collections of Cyclamens and hardy evergreens which were contributed to it, as well as for Chrysanthemums, Primulas, salad vegetables, Roman Hyacinths, and a few miscellaneous subjects.

Chrysanthemums.—In the class of twenty-four cut blooms (Japanese) Mr. J. H. Hinnel, Anglesea House, Surbiton, was first with magnificent flowers, among which were Auratum, Prince Satsuma, Apollo, Dr. Masters, and Aurora, yellow; Bronze Dragon, Madame Godillot, Ne Plus Ultra, bronze; Magnum Bonum, the Daimio, and the Sultan, lilac; Oracle and Meg Merrilees, white. Mr. Douglas, Loxford Hall, who was second, also had large and fine flowers. The finest blooms of large-flowered varieties were exhibited by Mr. G. Goddard, Cambridge Villa, Twickenham, who also showed a large collection of Chrysanthemums in pots. Mr. A. Forsyth, Stoke Newington, exhibited a collection of cut blooms of Chrysanthemums in good condition, considering the lateness of the season. Chrysanthemums, however, have invariably been later than usual in coming into flower this season. Amongst the large-flowered blooms in this collection were Countess of Granville, Mrs. Heale, Princess of Wales, Princess of Teck, Isabella Bott, and Miss Marcheaux, white; Beauty of Stoke, Guernsey Nugget, Jardin des Plantes, Cherub, and Barbara, yellow; John Salter, General Slade, Mr. Howe, and General Bainbridge, golden-bronze; Lady Talfourd, Countess of Dudley, Venus, Lady Hardinge, Pearl, Nonpareil, and Princess Beatrice, lilac; and Hero of Stoke Newington, a very fine broad-petalled lilac-blush variety. The following were amongst the best of the Pomponé Anemone-flowered ones in the same collection, Sidonic, Astarte, Rose Marguerite, Madame Chalonge, Antonius, Fire Fly, Marguerite de Coie, Roquelaure, Calliope, Astrea, Mrs. Wyness, and Dick Turpin; and amongst the Chinese-flowered ones were Meg Merrilees, The Daimio, Grandiflora, Erectum superbum, Pyramidale, Fair Maid of Guernsey, Soleil d'Or, Rob Roy, Jupiter, Red Dragon, Garnet. From Messrs. Cutbush, Highgate, came a very fine collection of cut blooms, including Japanese and large-flowered sorts; and from Mr. J. Shrimpton, Putney Heath, came some fine blooms of Venus, and White Venus.

Cyclamens.—These were shown in admirable condition on this occasion, the flowers being large and beautifully coloured, and on each plant there were from one to over three dozen flowers all open at one time. Mr. C. Turner, of Slough, although a new exhibitor of Cyclamens, was one of the most successful. Not only was he first for a dozen specimens, but he also exhibited a very large collection of plants bearing extremely fine flowers of every shade of colour, from the purest white to the most brilliant crimson; for these an extra prize was awarded. In the class of twelve Cyclamens, Mr. G. Goddard, Twickenham, was second, and Mr. Clark, market gardener at the same place, third. The last named exhibitor was also first with a collection of Cyclamens, and Mr. H. B. Smith, florist, Ealing, third.

Berry-bearing Plants.—In the class of hardy berry-bearing evergreens Mr. G. George, Putney Heath; Mr. E. Smith, Bristol House, Putney Heath; and Mr. J. Aldous, florist, Gloucester Road, Kensington, received prizes in the order in which their names stand. The subjects exhibited consisted of *Aucuba viridis* and *longiflora*, *Crataegus Pyracantha*, *Cotoneaster Simmondsii* (not evergreen); *C. microphylla*, and *C. m. pygmafolia*, *Skimmia oblata* and *japonica*, *Pernettya angustifolia*, *speciosa*, and *mucronata*, and *Gaultheria procumbens*.

Hollies, Conifers, and other hardy evergreens.—Of Hollies, Messrs. Veitch & Sons were the only exhibitors; they showed examples of *Ilex Watereriana*, the weeping variety of *Aquifolium fructu luteo*, Gold Queen, *Shepherdii*, Silver Queen, and its smaller variety *Donningtonii*, and *Aureo-marginata*. With Conifers, the same firm were also first with excellent specimens, in tubs, of *Juniperus drupacea*, erect-growing; *Thuja Vervæneana*, an erect-growing yellow variegated Conifer; *Retinospora plumosa*, *obtusata*, *nana*, *aurea*, *filifera*, *Lycopodioides*, and *filioides*; *Cryptomeria elegans*, and a graceful variety of the same; *Abies polita* (new); *Thujaopsis dolabrata*; and *Sciadopitys verticillata*. The same firm also showed one of the most beautiful of hardy evergreens—*Azara microphylla*—a shrub which has small-toothed, dark green leaves set on slender branches, and one which is likely to become one of our most useful wall plants. Messrs. Standish & Co., Ascot, sent some fine Conifers in pots, amongst which were a large variety of *Retinosporas*, the variegated *Thuja dolabrata*, *Cupressus Lawsoniana*, *erecta viridis*, and many others. Mr. Wm. Paul, Waltham Cross, showed a large collection of *Aucubas*, for which he was awarded an extra prize. Mr. E. Smith, nurseryman, Farnborough, sent (unfortunately too late for the committee) a curious form of the Scotch Fir, obtained from amongst a batch of seedlings. In habit it is compact and dense, clothed to the ground with foliage, and about 4 feet in height.

Roman Hyacinths.—These were shown in charming condition, in 12-inch pans, in which some of them had been grown, whilst in other cases they had evidently been only transferred to these pans for the occasion. For these useful autumn-flowering plants Mr. T. Farrow, Brigadier Hill House, Enfield, was first, Messrs. Standish & Co., second, and Mr. J. Aldous, third.

Miscellaneous Subjects.—From Messrs. Veitch & Son came

Poinsettia Bausei, a kind with entire acuminate leaves, a large head of cerise-coloured floral bracts; *Aphelandra nitens*, with pretty orange-coloured flowers, and the leaves of a dark metallic green colour above, and purple underneath. Mr. J. C. May, gardener to J. S. Bockett, Esq., Muswell Hill, showed one of the finest examples of *Masdevallia tovarensis* that we remember to have seen. It had sixteen flower-spikes, and thirty-six fully expanded blooms, besides many undeveloped buds. A collection of *Bouvardias*, including the good and useful *Vreelandii*, came from Messrs. Standish, who also contributed *Bridal Wreath*, with longer tubes than the former, and of a bluish colour; and *Bride*, a rose-coloured kind, with precisely the same habit and character of flower and foliage as *B. Vreelandii*. The same firm also showed some exquisite specimens of *Lily of the Valley* grown in pots. Cut blooms of *Zonal Pelargoniums*, Mrs. G. Smith, Santley, and *Adelina Patti*, were sent by Mr. G. Smith, New Villa, Hedge Lane, Edmonton. Messrs. W. and A. Brown, florists, Hendon, sent some very fine Chinese *Primulas*, including *P. sinensis fimbriata exquisita*, the finest deep crimson-flowered sort we have yet seen; *P. s. f. picturata*, with rose and white variegated flowers; *P. s. f. alba*, a fine white kind; and a beautiful bluish variety, to which a certificate was awarded. From Mr. Chambers, Spring Grove, Isleworth, came plants of the true *Lachenalia pendula*, an old species with red flowers, tipped with greenish-purple and robust unspotted leaves. Mr. Keen, gardener to J. C. Sheppard, Esq., Campsey Ash, Wickham Market, showed several plants of *Carnation Miss Joliffe*, a self-blush-coloured kind, remarkable for its free and continuous winter-blooming qualities, and for the young state in which it begins to flower. From the gardens at Chiswick came some pale rose-coloured Chinese *Primulas* and *Natal Begonias*. Some extremely handsome ornaments composed of electro-silvered leaves of plants were exhibited.

Fruit.—Mr. Jones sent from the Royal gardens, Frogmore, three splendid smooth Cayenne Pines, well-ripened, finely finished, and weighing over 8 lbs. apiece; for these an extra prize was awarded. Three fine Pines of the same sort were also sent by Mr. J. Harris, Singleton, Swansea, and another good example by Mr. G. Carter, Bedale, Yorkshire. Three excellent bunches of black Alicante Grapes, large, well-shouldered, and black as Sloes, were sent by Mr. J. Wattan, gardener to A. H. Longman, Esq., Sendish, Hemel Hempstead. Mr. Tappenden, Sutton Court, Chiswick, sent a dish of very fine Medlars, and Mr. F. N. Dancer, Chiswick, exhibited some good examples of *Beurré d'Arenberg* Pears. Mr. Hepper showed a basketful of fine Chaumontel Pears, and from the Royal gardens, Frogmore, came samples of the Frogmore Swan's Egg Pears, raised from seeds of the common Swan's Egg, and said to be good keepers. In shape they are precisely like Apples, and have a dark green skin, shaded with brown on the sunny side. A cultural commendation was awarded to Mr. Chambers for some very fine Blenheim Orange Apples. Mr. Wright, Enfield; R. Taylor, Esq., Ipswich; and Mr. Clark, Stackpool, Writtle, sent seedling Apples; Mr. Ross also sent specimens of Welford Park Nonesuch Apples, and Messrs. J. & C. Lee, Hammersmith, showed a seedling Pear.

Salad and other Vegetables.—With Endive and other salad vegetables, Mr. W. Bagnell, Sherbourne Castle, Dorset, was first; Mr. J. Hepper, the Elms, Acton, second; and Mr. J. W. Moorman, Coombe Park, Kingston-on-Thames, third. Amongst kinds shown in this class were Rollisson's Telegraph Cucumbers, Williams's Matchless Red, Major Clark's Solid Red, Veitch's Silver White, Carter's Dwarf Crimson, and other Celeries; Osborn's Selected, Pine-apple, Carter's Perfection, Nutting's Dwarf, Minier's Dark, Chelsea, and Large Blood-red Beets; Red and White Turnip and Salmon-rooted Radishes, and White Californian Radish; Tarragon, Chervil, Chicory, Dandelion, Water and American Cress; Mustard and Cress, French Sorrel, Corn Salad, a large variety of Curled and Batavian Endives, and Cos and Cabbage Lettuces. Mr. Parr, East End House, Fulham, exhibited some specimens of Mushroom spawn made by himself, and also a basketful of very fine Mushrooms. Some nice solid and white heads of Snow's Superb Winter White Broccoli were exhibited by Messrs. Veitch & Sons. Mr. Gilbert, of Burghley, showed some very fine Walcheren Broccoli, Cos Lettuces, Round and Kidney Potatoes, Old Dun French Beans, and Blanched Asparagus. Thirteen varieties of Potatoes were exhibited from the gardens of the Society at Chiswick, including Excelsior Kidney, Breesee's Prolific, Model, and Waterloo Kidney, white Kidneys; Cottager's Red, Bountiful, Webb's Red Blossom, Compton's Surprise, and Wood's Scarlet Prolific, red or purple, flattish or Kidney-shaped; Red-skinned Flour Ball, red, round; Blanchard, white and purple variegated, roundish flat; and Summer Hill Seedling, a roundish, flat, purple Potato.

First-class Certificates were awarded to the following:—

Barkeria elegans *Lindleyana Centeræ* (Veitch), a pretty lilac-coloured Orchid with a violet-tipped lip.

Abies polita (Veitch), a pretty small Conifer, the plant shown being about 2 feet high.

Primula sinensis fimbriata cerulea (Brown), a decided acquisition, the flowers being large, of good form and substance, and of a bluish-lilac colour, almost the same as that of *P. cortusoides amona* var. *cerulea*.

Retinospora obtusa aurea gracilis (Veitch), one of the most graceful and beautiful of Conifers, suffused throughout with golden-yellow, the ends of all the branchlets being decidedly pendulous.

Bell's Labels.—With reference to these labels, so well figured in THE GARDEN for Nov. 22, I find that they are not as strong as one would expect iron labels to be; in fact, some I have bought have broken easily.—W. G. H.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ALPINE PLANTS AT BENTHALL HALL.

By J. C. NIVEN, Botanic Gardens, Hull.

DELIGHTFULLY situated in the valley of the Severn, on a hill of some 600 feet in altitude, stands Benthall Hall, the residence of Mr. Maw, one of the keenest and most enthusiastic collectors of Alpine plants of the present day—one who, though but recently inoculated with the fever of mountain-climbing in search of nature's rarest gems, has done much good work, in introducing many plants into cultivation that were hitherto known only by name in floras, or to be met with in a mummified condition in herbaria. Seeing what he has done, and knowing the numbers of good plants that have been duly named and registered as belonging to our European floras, and yet have never become subjects of cultivation, it behoves us to appreciate at a high value those who introduce us personally to our distant, but much-loved, friends, and who even further bring those friends home to our very doors. The above remarks are in some measure forced upon me by the circumstances under which I paid a long-talked-of visit to Benthall Hall a few weeks ago. Mr. Maw had returned but a few days before from a fortnight's revel in the beauties of the Maritime Alps; and, in two of his large garden-frames, were to be seen masses of rare plants, looking wonderfully fresh after their pilgrimage—*Saxifraga florulenta*, with large rosettes of lanceolate leaves, the living and dead combined, representing possibly more than a score of years' growth ere it had acquired dignity sufficient to offer upon its mountain altar its flowery sacrifice—the climax of a long life to which the term sacrificial may well be given, seeing that, like *S. mutata*, and others of the group to which it belongs, its flowering and its death are all but synonymous. Contrasted with this species were patches of *Saxifraga squarrosa* from the Tyrol, so dense and minute as scarcely to realise the possibility of measurement at all, and bearing a greater likeness to some stone-loving Lichen than anything else, only rivalled by the, if possible, more minute *Saxifraga Rudolphiana* from the Tyrol. Alongside of these were pans of *S. biflora*, covered with ripening seed-pods—a plant related to *oppositifolia*, which has hitherto been so singularly unamenable to cultivation. Possibly seeds gathered, sown, and reared in this country may acquire the necessary amount of acclimatisation, so that we may yet see the progeny of the parent plants flourishing and flowering in the autumn with the same vigour as its lovely congener, *S. oppositifolia*, does in spring. Amongst the *Primulas* were to be seen many of the rare Piedmont Primrose (*Primula pedemontana*), usually met with in our collections in a most fragmentary form; and the rarer *Primula Allioni* in good tufts, full of promise of a goodly floral display in the spring. Besides those in pots, I observed sundry groups in the bog-beds—groups fully 15 inches in diameter, densely packed with nodules of limestone grit, looking as happy as though the Severn valley were their home. Did time and space permit, I might enumerate a host of other interesting plants; but, as the object with which I started is to give a brief description of the herbaceous ground at Benthall Hall, I must proceed. The hall itself—a structure of no modern date, seeing that it has weathered the corroding hand of time for some three centuries—is situated on a range of hills that, as it were, flank the valley of the Severn, and, with an altitude of about 600 feet above the sea, offer, in that very fact alone, a not unfitting home for the class of plants in which Mr. Maw is especially interested. The position of the house was evidently originally chosen more with reference to shelter than with a view of utilising the grand prospect close by; for, a few hundred yards to the rear might have been obtained a view of richest beauty, extending some thirty miles up the wide valley of the Severn, in the midst of which the silvery stream appears to twist and twine as though it were loath to leave the surrounding glories. Far beyond rise the

mountains of North Wales, their irregular outline rendered clear and incisive, at the time I contemplated the prospect, by the glories of an autumnal sunset. Lovely as the scene is—and there are few prospects in Britain more lovely—not even a glimpse of it is commanded by the house, which, nestling amongst trees just sufficiently below the brow of the hill to obtain a modicum of shelter, has before it a limited, though by no means unpleasing, prospect. Possibly, had it been my lot to contemplate the valley in the face of a south-west gale, I might have been able to appreciate the utilitarian principles on which the original selection was made. From the front of the hall, the kitchen garden is well shut out by a mass of trees and shrubbery. I ought to have said the kitchen garden "that was," the fact being that the greater portion of it is now devoted to herbaceous and Alpine plants; and so densely packed is the ground thus occupied by them, that soon the *Espaliers* and *Asparagus*, as well as sundry other items that fill the remaining quarter, must give place to more varied and interesting occupants.

Having thus indicated the fact that the recently-formed herbaceous ground at Benthall is now partly, and formerly was altogether, a kitchen garden bounded by a wall on the north and west sides, it will be easily inferred that in arranging the beds, a certain amount of formality would be necessary. Such, therefore, is the case, the external beds devoted to those groups characterised by dwarf growth, are narrow, about 6 feet wide, somewhat raised above the general level, and well prepared for the reception of such plants as *Sedums*, *Saxifrages*, *Primulas*, &c., &c., by a due admixture of roughly-broken freestone, amongst which they appear to revel in the happiest manner. The central portion is broken up into borders, of a triangular character, indented by the central circle of each group. The several circles being beds devoted (to quote a happy title for which I am indebted to Professor Owen) to the *Lit de l'élite*, well prepared with peat soil, in which a goodly selection of *Liliums*, *Epimediums*, and other bog-loving plants, were growing luxuriantly, and, amongst the *Epimediums*, *E. macranthum* was covered, at the time of my visit, with its white blossoms, just tinted with lilac sufficient to enhance the contrast between its flowers and its yellowish-green foliage. With a view to neutralise the bare appearance which every herbaceous ground must necessarily present in the winter, especially when contrasted with the redundant and dense growth of the summer, the centre of the circles is devoted to *Alpine Rhododendrons*, the later hardy *Heaths*, *Ledums*, and such like; and, in the central portion of each of the triangular beds surrounding the same, is planted a group of select ever-green shrubs, of a medium style of growth, as regards size. These, doubtless, in the first instance, had a good and fair margin left for their development, but, as the rightful "heirs-at-law" put in an appearance, their originally formed ranks were extended deeper and deeper still, until their close proximity to the shrubs threatens to militate seriously against their fair and reasonable development. Were I to find a fault at all, it would be, not that these groups of winter-green shrubs are unnecessary, but that a far less aristocratic set of shrubs had not been chosen, the lateral curtailment of whose growth might have been attended with less qualms of conscience. Doubtless those *in situ* are masters of the situation during the winter; whether they will long retain their mastership is another question, seeing that this summer growth is made under the protective influence of their too adjacent neighbours. All the beds are neatly margined with Box-edging, and, seeing that the families and genera are located together, as they ought to be, as much regularity as is perhaps possible under such circumstances in the growth and development of the occupants of the marginal borders has been attained. Still however, so varied is the development and growth of herbaceous plants in different localities, that each accession must be necessarily planted subject to future modifications, and such alterations and modifications must doubtless form one of those stimulants to continuous interest which constitute an all-important element to the cultivator of a collection of herbaceous plants.

The way in which the collection is labelled and otherwise set off to advantage by Mr. Maw's gardener, must form the subject of a future notice.

NOTES OF THE WEEK.

— MR. JOHN BAIN has, after a long rest, necessitated by illness, returned to his old duties as director of the College Botanic Gardens at Dublin. This will be welcome news to many of our readers.

— FORCED Lily of the Valley, in flower, has been seen in Covent Garden for the last eighteen days; the first supplies came from Messrs. Herbst, Mr. Standish, and the Pine Apple Nursery Company. The white Lilac, from the Paris [forcing]-houses, has also been in the market for about the same time.

— In the *Times* of the 5th inst., under the heading of "Wills and Bequests," we observe the welcome announcement, that Mr. Andrew Barnett, late of Macclesfield, has left (among other charities), to the Gardeners' Benevolent Institution, London, the sum of £1,000, payable on the death of his widow. Mr. Barnett, we learn, was not a subscriber to the institution.

— AMONG winter-blooming plants the yellow *Jasminum nudiflorum* is now very attractive, especially when trained upon a southern aspect. We never see this plant upon cottage walls without regretting that it is not intermixed with some neat berry-bearing plant, such as the *Cotoneaster* or *Pyracantha*, when the contrast between the two would be most beautiful.

— SOME of the most beautiful wreaths we have ever seen are now exhibited in the central row in Covent Garden Market. They are formed of bleached Grasses and Immortelles, among which is a large silvery kind, introduced by Messrs. Hooper, which we have not seen before the present season. It is known in the trade as the Silver Cape Flower, and is probably one of the many beautiful *Helichrysums* common to Southern Africa.

— MR. PARSONS, of New Jersey, gives an account of some very fine Pears in the *Cultivator*. I raised (he says) this season, from dwarf trees set out three years ago, a quantity of Duchess Pears, a bushel of which were sent to market, there being but forty-eight Pears to the bushel, thus averaging a little less than nineteen ounces each. The remainder of the crop were very fine fruit, half of which were equal to the above.

— THE directors of the Crystal Palace Company have elected Captain Flood Page to succeed Mr. Grove as secretary at the end of the year. Captain Page has long been known as an active member of the executive committee of the Wimbledon Rifle Meeting, in addition to which he acted for some years as agent to Lord Spencer's Wimbledon property, and in other capacities highly fitting him for the position which he has obtained. Mr. Wilkinson will now become general manager of the Crystal Palace.

— THE fruit trees, which were planted only four years since in the ground attached to the horticultural school of St. Mandé, near Paris, have this year yielded 30,000 Pears, Apples, and Peaches, in addition to nearly three-and-a-half cwt. of Cherries, Grapes, Gooseberries and Currants. In two years more, it is expected that the trees will arrive at their maximum of produce. These speedy results are due to the personal superintendence of M. Du Breuil, the eminent arboriculturist.

— FROM the Portuguese *Jornal de Horticultura Pratica* we learn that a horticultural exhibition was recently held at Cadiz, and that "the first medal (silver) was awarded to Snr. D. Juan Lopez Padilla, for his collection of Conifers and Orchids. The second medal (copper) was adjudged to Snr. D. Diego de Agreda, for the fine specimens of Begonias which he showed. Certificates of 'honourable mention' were granted to Snr. D. Rafaela Ponce de Leon, the Casino Jerezano, and some private individuals for various plants exhibited by them." We have read this report with much pleasure, as evincing the remarkable progress which horticulture, in its higher forms, has made, within the last few years, in the Spanish Peninsula.

— WE have just received some excellent specimens of Apples from Mr. Hill, European agent of the Burlington and Missouri River Railroad Company, of 25, Moorgate Street. They came all the way from Nebraska, and travelled two thousand five hundred miles before arriving at the sea-board whence they were shipped to England; they are, as is not unusual with Apples from America, in as good condition as if just carefully picked from the tree by hand. They are not so remarkable for size as for firmness of flesh, good flavour, and high brilliant colour. When we passed through Nebraska in the autumn of 1870, the prairies of that great territory were in many places only peopled by the graceful wild antelope, and, no doubt, this must for some time remain the case. We mention this to show that Nebraska is the latest planted orchard of the States. It forcibly reminds us of the vast extent of America which is admirably adapted for the culture of our more important hardy fruits. Covent Garden was last winter largely supplied with its best Apples from the State of New York, and it is not improbable that before another generation has passed away, the

orchards of the United States will be able to supply, and supply easily, the fruitless regions of the north, and make up every deficiency of fruit arising in Europe from frost, bad years, and other causes.

— THERE is now one of the prettiest specimens of *Sophronis grandiflora* that we have seen for some time, in bloom in the Royal Exotic Nursery, Chelsea, the flowers being both large and very brilliant, and numbering upwards of a dozen.

— WE have been shown a collection of Orchids, Tillandsias, and Palm-seeds by a gentleman just arrived in this country from Florida, several of which we believe to be new to our gardens. One of the Tillandsias bears a great branched flower-spike from 2 to 3 feet long, the buds of which will shortly open. They may be worth the attention of those interested in new exotics.

— THE local exhibition of the Royal Horticultural Society, at Bath, has resulted in a net profit of £1,200, one-half of which, according to custom, will be appropriated by the society, while the remainder (subject to a grant of £20 towards the maintenance of the institution gardens) will be divided between the Royal Victoria Park and the Hanoverian Band Committees.

— PROF. SHALER makes a rather novel suggestion for improving the navigation of the Ohio river, and at the same time preventing the enormous destruction of property which its floods now occasion at intervals, by washing away its banks. He thinks that this could be accomplished by simply planting Willows upon the banks, as he finds that wherever such a plantation has been effected, the resulting growth not only holds the soil in which it is rooted, but accumulates that which is brought down by the river. When the banks have been sufficiently strengthened and extended by means of such plantations, a deepening of the channel must result, which will improve navigation.

— A BEAUTIFUL new Lily from California, named *L. purpureum*, will be offered for sale next Thursday by Mr. Stevens. Its flowers are said to vary in colour from a purple to a purple-lilac. It is the first time it has been offered for sale; and the collector, who found it in Humboldt County, writes that it is very fragrant, and the finest of all Californian Lilies. At the same time, an unusually large sale of other rare Lilies will take place, including about 500 of the double-flowered Tiger Lily; 300 of *Lilium Humboldtii*, one of the most distinct and beautiful of Lilies; together with several hundreds of such choice kinds as *L. Philadelphicum*, *L. pulchellum*, *L. superbum*, *L. Szovitzianum*, *L. columbianum*, *L. tenuifolium*, and *L. carolinianum*.

— A CORRESPONDENT writes to us as follows respecting the Pitch Lake Pine-apples, of which we gave some account (see p. 445). "I have grown," he says, "the Surinam or Pitch Lake Pine for many years, and, though good, I never found it first-rate, that is, not equal to Black Jamaica, Montserrat, St. Vincent, and the finer varieties of the Queen Pine. The Pitch Lakes doubtless suit Pine-apple growth perfectly; but, for positive root-inducing power, I have never met with any soil equal to the hungry heavy loam which thirty years ago we used to procure from Norwood. The splendid Pines which are now coming into our market are from the Azores, whence they were introduced twenty-five years ago by your correspondent, Mr. Peter Wallace, and grown in vegetable matter with stable dung for bottom-heat. They are planted in rough pits, and are fully exposed, glass only being used to protect them from the drenching and almost instantaneous rains peculiar to that climate. Can rest do any thing for them? In the Azores there is little or no twilight, night and day being equally divided."

— THE case of Leicester Square, lately before the Master of the Rolls, recalls attention to a spot which has long been the opprobrium of the metropolis. For at least twenty years it has been going from bad to worse. The rusted railings disappeared one by one, and beaten tracks across the enclosure extended right and left till not a vestige of green remained to suggest the thought that the place had once been set out as a garden for the pleasure of the surrounding inhabitants. The last transformation of the scene was the enclosure of the area within a hideous hoarding, 12 feet high, covered over with placards. The Master of the Rolls has decreed that this hoarding shall be removed, and we wish we could be sure that Leicester Square was now at last about to fulfil its original object by becoming an ornament to the neighbourhood. We should expect this to be the result if we had not been so often disappointed. An Act of Parliament was passed just ten years ago for the express purpose of enabling the Metropolitan Board of Works to take the square in hand and make it once more a garden; but the Court of Queen's Bench decided that it certainly did not give the Board of Works any such power. Let us hope, however, now that the Master of the Rolls has ordered the ground to be put in order and the railings into proper repair, the enclosure may become a pleasure-ground as it was century ago.

THE GARDEN IN THE HOUSE.

ORNAMENTAL FLOWER POTS.

COMMON earthenware pots are the best that can be employed for all kinds of plants, from a cultural point of view; but where Palms, Ferns, and other choice exotics are used for the decoration of the drawing-room or boudoir, we must needs employ pots or vases more in keeping with their elegant surroundings. Plants are now so generally used as decorative objects in tasteful homes, that really artistic embellishments, in the way of pots and vases, are looked upon more as necessities than as useless elegancies, and many of them are so unique and pretty in point of design and elaborate finish that they are everywhere admissible. For the opportunity of sketching the accompanying group, we are indebted to the courtesy of Messrs. Dick Radclyffe & Co., of High Holborn, who make these graceful ornaments a speciality in their establishment. They are made in several kinds of material, such as enamelled porcelain, Terra cotta, and Etruscan ware, the sprays of foliage, Fern fronds, and other ornamental appendages having been in many cases modelled from natural specimens, correctness of form, and natural beauty being thus ensured. The introduction by Messrs. Dick Radclyffe & Co. of these beautiful examples of the potter's art is calculated to foster a love for plants in sitting-rooms; while for hiding flower-pots on the dinner table these enamelled vases are admirably adapted, being far prettier than the gaudily-coloured and ill-designed substitutes which have been, until recently, too commonly employed for such purposes. Our illustration shows their adaptability as drawing-room ornaments, and they may be filled with damp Moss, when they will be found useful as receptacles for cut flowers, sprays of elegant foliage-plants and spring-flowering bulbs. B.



Ornamental Flower-pots.

Leaf Ornaments for Window Screens.—The following may afford amusement and pleasure to those who take a delight in domestic decorations:—An exquisite transparency may be made by arranging pressed Ferns, Grasses, and autumn leaves on a pane of window glass, laying another pane of the same size over it and binding the edge with ribbon, leaving the group imprisoned between. Use gum-tragacanth in putting on the binding. It is well to secure a narrow strip of paper under the ribbon. The binding should be gummed all round the edge of the first pane, and dried, before the leaves, Ferns, &c., are arranged; then it can be neatly folded over the second pane without difficulty. To form the loop for hanging the transparency, paste a binding of galloon along the edge, leaving a 2-inch loop free in the centre, afterwards to be pulled through a little slit in the final binding. These transparencies may be either hung before a window, or, if preferred, secured against a pane in the sash. In halls a beautiful effect is produced by placing them against the side-lights of the hall door. Where the side-lights are each of only a single pane, it is well worth while to place a single transparency against each, filling up the entire space, thus affording ample scope for a free arrangement of Ferns, Grasses, and leaves, while the effect of the light passing through the rich autumnal colours is very fine. Leaves so arranged will preserve their beauty during the whole of the winter. Screens of this kind have lately been advertised in London, in which the Ferns, &c., prepared by a peculiar process, are guaranteed by the inventor to retain their verdure for years.

THE INDOOR GARDEN.

HYBRID ORCHIDS AND NEPENTHES.

It is now nearly twenty years since Mr. Dominy, the well-known manager of the plant department of Messrs. Veitch and Sons' nursery, at Chelsea, turned his attention to the hybridisation of rare plants, and this was not at Chelsea, as many suppose, but in Messrs. Veitch's establishment at Exeter. Those who know most of hybridisation will best comprehend the difficulties which he had to surmount in achieving the crowning success which attended his efforts, and with which almost every plant grower and amateur is now familiar. In the fertilisation of Orchids, Mr. Dominy has been most successful, and we need only allude to *Cattleya Exoniensis* and *Calanthe Veitchii* as illustrative examples, these being not only the best of hybrid Orchids, but also two of the best of all Orchids at present in cultivation. It must be remembered that when the fertilisation of Orchids commenced

at the Exeter establishment, comparatively little was known on the subject. Francis Bauer had made microscopic drawings of the structure and formation of many curious Orchid flowers, but these were not distributed or so accessible as now. Darwin's work was not written until Mr. Dominy had made considerable progress with hybridising Orchids, and had acquired a large amount of practical experience as to the best way of treating their minute sawdust-like seeds in order to ensure germination. It must be borne in mind that Orchid seeds do not germinate so readily as those of most other plants, and it is often years before the little seedlings are discerned peeping out of the living Sphagnum on which they were sown. Some of these hybrid plants which now delight us with their glowing colours and grateful fragrance have been watched and tended for a dozen years or more before the anxious cultivator has been rewarded with the sight of their first blossoms, and then many of them have been found worthless, or nearly so, for it must not be supposed that every hybrid obtained has been so valuable either from a floral or

scientific point of view as those we here enumerate for the first time in a collected form. One remarkable fact in connection with these hybrids is their intermediate nature, this being so obvious in many cases that any Orchid-grower could easily guess the names of their parents directly he saw the hybrids in flower. From a scientific point of view the crosses effected not only between distinct species, but, also between supposed genera have taught us much. *Lælias* and *Cattleyas* cross with each other as freely as species of either genus, and the same remark holds good with *Phajus* and the deciduous section of *Calanthe*. This, in our opinion, fully bears out the views of Professor Reichenbach, who does not consider the numerical arrangement of the pollen-masses a character sufficient to separate *Cattleyas* from *Lælias*. Cross fertilisation or hybridisation by man's agency is, as yet, in its infancy, while insects have unconsciously carried pollen from flower to flower for ages past, thus adding much to the perplexity of modern botanists; and, doubtless, when we know more of cross-breeding among vegetables, our views of genera and species will be materially altered.

The value of these hybrid forms to the cultivator can

scarcely be over-rated, and fine specimen plants of them exist in different collections. Not long ago we alluded to the noble specimen of *Cattleya Exoniensis* at Meadow Bank, which was then bearing sixty-three flowers, and a week or two ago we saw a splendidly-grown plant of *Cattleya Dominiana*, with upwards of thirty delicately-tinted broad-petalled flowers. *Calanthe Veitchii* is everywhere grown, and it is not uncommon to see it flowering by the dozen in many gardens, while some of our readers may remember the fine specimen shown by Mr. Jaques at South Kensington, a year ago. In order to make our list of hybrids as complete and interesting as possible, we append three others, viz., *Cypripedium Ashburtoniae*, raised by Mr. Cross, C. Sedeni, and *Cattleya Fausta* (see page 435), both raised by a promising pupil of Mr. Dominy's, to whom we alluded in our last issue. It is interesting to know that *Cypripedium Sedeni* has been obtained true from seed borne by *C. longifolium* crossed with pollen from *C. Schlimmii*, and *vice versa*, there being no perceptible difference in the seedlings in either case. This is interesting, as different varieties of other Orchids are sometimes produced from the same seed-pod. It is, moreover, interesting to know that *C. Schlimmii* and *Disa grandiflora* come true from seed when fertilised with pollen from another individual of the same species. Horticulturists have to thank Mr. Dominy for much valuable information respecting these hybrids, which, in the following list are prefixed with an asterisk (*), and are placed between their respective parents:—

ORCHID HYBRIDS.

<i>Phajus grandifolius</i>	<i>Cattleya (Laelia) crispa</i>	<i>Aërides affine</i>
* <i>Phajus irroratus</i>	* <i>Cattleya (Laelia) Pilcheri</i>	* <i>Aërides hybridum</i>
<i>Calanthe vestita</i>	alba	<i>Aërides Fieldingii</i>
	<i>Cattleya (Laelia) Perrinii</i>	
<i>Cattleya guttata</i>	<i>Cattleya (Laelia) crispa</i>	<i>Dendrobium nobile</i>
* <i>Cattleya hybrida maculata</i>	* <i>Cattleya (Laelia) Pilcheri</i>	<i>Dendrobium Dominii</i>
<i>Cattleya intermedia</i>	<i>Cattleya (Laelia) Perrinii</i>	<i>Dendrobium moniliforme</i>
		<i>Cypripedium barbatum</i>
<i>Calanthe masuca</i>	<i>Cattleya maxima</i>	* <i>Cypripedium Ashburtoniae</i>
* <i>Calanthe Dominii</i>	* <i>Cattleya Dominiana alba</i>	<i>Cypripedium insigne</i>
<i>Calanthe furcata</i>	<i>Cattleya amethystina</i>	
		<i>Cypripedium longifolium</i>
<i>Limnolobos rosea</i>	<i>Goodyera discolor</i>	* <i>Cypripedium Sedeni</i>
* <i>Calanthe Veitchii</i>	* <i>Anæctochilus Dominii</i>	<i>Cypripedium Schlimmii</i>
<i>Calanthe vestita</i>	<i>Anæctochilus xanthophyllus</i>	
		<i>Cattleya Exoniensis</i>
<i>Cattleya Loddigesii</i>	<i>Goodyera discolor</i>	* <i>Cattleya Fausta</i>
* <i>Cattleya Brabantiae</i>	* <i>Goodyera Veitchii</i>	<i>Cattleya Loddigesii</i>
<i>Cattleya Aclandiae</i>	<i>Anæctochilus Veitchii</i>	
		<i>Nepenthes distillatoria</i>
<i>Cypripedium barbatum</i>	<i>Cattleya crispa</i>	* <i>Nepenthes hybrida</i>
* <i>Cypripedium vexillarium</i>	* <i>Cattleya Devonensis</i>	<i>Nepenthes, spotted species from Borneo, unnamed</i>
<i>Cypripedium Fairricanum</i>	<i>Cattleya guttata</i>	<i>Nepenthes distillatoria</i>
		* <i>Nepenthes hybrida maculata</i>
<i>Cypripedium Pearcei</i>	<i>Cattleya granulosa</i>	<i>Nepenthes, spotted species from Borneo, unnamed</i>
* <i>Cypripedium Dominii</i>	* <i>Cattleya hybrida</i>	
<i>Cypripedium caudatum</i>	<i>Cattleya Harrisoniae</i>	<i>Nepenthes Rafflesiana</i>
		* <i>Nepenthes Dominii</i>
<i>Cattleya Mossiae</i>	<i>Cattleya maxima</i>	<i>Nepenthes, green species from Borneo, unnamed</i>
* <i>Cattleya Mangiesii</i>	* <i>Cattleya Dominiana</i>	
<i>Cattleya Loddigesii</i>	<i>Cattleya amethystina</i>	<i>Fuchsia serratifolia</i>
		* <i>Fuchsia Dominii</i>
<i>Cypripedium barbatum</i>	<i>Cattleya Mossiae (Syn House var.)</i>	<i>Fuchsia spectabilis</i>
* <i>Cypripedium Harrisonianum</i>	* <i>Cattleya exoniensis</i>	
<i>Cypripedium villosum</i>	<i>Laelia purpurata</i>	
<i>Cattleya Aclandiae</i>	<i>Cattleya (Laelia) crispa</i>	
* <i>Cattleya quinque-color</i>	* <i>Cattleya Sidniana</i>	
<i>Cattleya Porbesii</i>	<i>Cattleya granulosa</i>	

TREE-FERNS FROM STEM DIVISION.

WHEN, some few years ago, people in this country were first made familiar, by means of imported full-grown living stems, with examples of the gigantic Fern flora of New Zealand and other distant lands, the impression obtained (says the *Irish Farmers' Gazette*) that their increase in height and bulk was an exceedingly slow process, and speculation was rife as to the great age of these bulky, fossil-like, yet living patriarchs of the antipodean Fern gullies. Experience has, however, dissipated the impression, and set at naught the speculation. From what we now know of the growth and development of Tree-Ferns under glass, the conclusion is inevitable that, as regards rapidity in both respects, they have few equals in the wide range of the vegetable kingdom. Here is an example necessitating the bold and successful experiment which we shall describe presently. Maury, doubtless, have seen Mr. Bewley's famous Fernery, at Rockville, Blackrock, and admired the stately Tree-Ferns which rear their tall stems and expand their luxuriant coronals beneath its lofty double-glazed roof, which roof we have seen threatened to

be lifted from its fastenings, or, at all events, burst through by the sheer force of vegetation, as exemplified by the marvellous development of the growing fronds. Now, this Fernery has not been many years erected, and yet more than once has the rapid growth of the New Zealand Tree-Ferns created a difficulty by threatening to lift the roof or find their way through it. This difficulty was met more than once by the expedient of sinking in the floor and lowering the roots and stems. This succeeded for a time; but there was a point beyond which the sinking process could not be carried, and meanwhile the huge chon volutes of *Cyathea medullaris* again touched the roof. What was to be done? the roof should either go up or the New Zealanders come away. In this fix, a bold and hazardous experiment suggested itself, which was at once carried into operation, and so far with most satisfactory results. Each tree was lifted from its position, laid down upon its side, and with no keen knife or cunning hand, but with an ordinary cross-cut saw worked by strong arms, the connection between stem and root was quickly severed at the collar. The stem, however, was yet too long, and the saw went to work again, taking another section, and reducing its length by some three or four feet more. Again was the rootless stem, with its spreading fronds, placed upright in its position, and made firm in its rock-work mound. In replanting, the only precaution taken by Mr. Sayers—Mr. Bewley's very worthy and intelligent gardener—was that no soil should be in immediate contact with the stump; clinkers, broken bricks, and such like only being allowed to touch the buried portion. Nothing could be more satisfactory than the result: the subjects thus summarily operated on seemed scarcely conscious of it, but boldly held up their leafy honours, and continued to throw up new fronds, and are now growing away as though nothing had happened; but rather look as if that ere many more years go by they will call for a repetition of the operation. When congratulating Mr. Sayers on the success which attended his bold experiment, he modestly, and, as we believe, truly said, "In any other than a double-glazed house, I do not believe it would have been so successful."

The Yellow-fruited Rivina.—It is stated (see p. 436) that this "Rivina appears to be lost." I have grown it for five or six years, and continue to do so, on account of the distinct and striking colour of its berries; but for general usefulness as a decorative plant, it is far behind the red-berried sort. All the Rivinas, if grown as pot plants, do best raised from seed every spring, and grown on in a light warm house or pit. A free rich soil suits them perfectly. When well grown, a plant in a 6 or 8-inch pot will be at least 2 feet through, and 2½ or 3 feet high. The purple and yellow-berried sorts are merely useful for variety. The red-berried kind is much handsomer than any other. The clusters of berries are usually 6 or 7 inches long. I have had them 9 inches. I am acquainted with no stove plant for winter decoration so easily grown, and which, at the same time, produces such a charming effect.—J. E.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Masdevallia Tovarensis.—This gem amongst cool Orchids, as grown and flowered in the collection of Mr. Bockett, is a sight never to be forgotten. The rich deep green leaves show how healthy the plant is, whilst the dazzling snowy whiteness of its three dozen flowers is indescribably beautiful.—G.

Plant Vases.—I noticed when passing through Covent Garden a few days ago some prettily designed basket-vases. They were made to represent imitation wicker-work, round in form, from 4 inches to 6 inches deep, and a foot or so in diameter, the rim being broad, like that of a sailor's hat inverted. These were filled with a central plant surrounded by a belt of others, and the whole having a pretty appearance.—W. F.

Dendrobium bigibbum.—This truly beautiful North Australian Dendrobe has lately been finely in flower in the choice collection of Mr. Bockett, at Muswell Hill. The rich rosy-purple blossoms of this rare species are so seldom seen, that even when not in such fine condition as the plant just named, the event is worthy of record, but here it has really been very fine; indeed, the healthy condition of the whole collection is quite in keeping with the enthusiastic love for these plants displayed by their owner.

Tan Beds.—If tan beds in stoves are now renewed, they will emit a good deal of warmth throughout the winter, and will materially assist in saving fuel, while the heat given off by them will be better for the plants than that afforded by hot-water pipes. No fears need be entertained of starting plants prematurely by the addition of new tan; for, instead of being plunged, they may be placed on the surface of the beds, or they may be plunged with a brick under each pot, the sides of which need not touch the tan.—W.

Strelitzia reginae.—This old-fashioned plant, although a native of the Cape of Good Hope, is generally found occupying a place in our stoves; indeed, I never saw it anywhere else, until I saw it grown in a cool Camellia house in the nurseries of Messrs. Jackson and Sons, at Kingston-on-Thames. There it is grown in a house in which Azaleas, Camellias, and hardy and half-hardy Ferns are kept, and it has always flowered satisfactorily. In proof of this, old specimens were bearing flowers in profusion, and little plants in 6-inch pots were producing one and two-flower spikes apiece. The fact that it grows and flowers freely under cool house treatment, and is a winter bloomer too, strongly recommends it to our notice.—W. F.

AMBER.

AMBER is a resinous gum, which, originally in a liquid state, has hardened to the appearance of a precious stone. It, however, belongs to a geological period anterior to what now exists, and is found on the shores of the Baltic, in Spain, Africa, and some other quarters. Occasionally, pieces are washed up by storms on the eastern coast of England. A remarkable thing about amber is, that many pieces of it contain a variety of beautifully preserved insects, among which are many entire diptera (common flies and gnats), orthoptera (grasshoppers, crickets, and cockroaches), hymenoptera (saw and turnip flies, bees, wasps, and ants), one lepidoptera (butterfly), and several coleoptera (beetles). Leaves and stems of plants, and a small shell, are also preserved. All such objects, animal and vegetable, were of course, incorporated with the substance when it was in a liquid jelly state. The flies and other creatures had stuck, and could not get away.

When the amber is first found, it is in a very rough state, and can only be detected by a practised eye, and requires to be rubbed down and polished before the curious and beautiful fossils it contains can be seen. Although the communication between the Baltic and the German Ocean is broken by the land of Denmark, and only exists through the island of Zealand, and others which lie between Denmark and Sweden, it is quite possible, and by no means improbable, that currents may have conveyed pieces of amber from the coasts of the Baltic, through the Cattegat, into the North Sea, and thence they would occasionally, though rarely, be picked up on our eastern coasts. They may, perhaps, have been brought thence during the post-Tertiary period (a date comparatively modern in the geological history of the globe), when the now land of Denmark was depressed beneath the ocean, and hence the North Sea and the Baltic would form one uninterrupted expanse of water. There is no reason to suppose that any Tertiary deposit exactly equivalent to the amber-bearing earth about to be described exists at the bottom of the North Sea; otherwise, amber would be found in abundance on British shores washed by it. Amber has been found in the gravel-pits near London, derived probably from some of the Tertiary strata of our island; and pieces of resin occur in the clays of the Wealden in the Isle of Wight, and in the London clay at Highgate. Perhaps one of the richest deposits of amber, and for which it has been long celebrated, is a province of Prussia called Samland, bounded on the west and north by the Baltic. In a portion of this district fine sections are exposed of the Tertiary formation, varying from 80 to 125 feet in thickness. It consists of two different deposits, the lowest being composed of thick beds of glauconitic sand, 65 feet thick, overlaid by the brown coal formation, from 60 to 100 feet thick. This glauconitic sand (which is marl containing a large admixture of greensand, and forms what is called firestone or glauconite) in the north and west coast differs from that in the south. In the former, the upper part, about 60 feet consists of light greensand, made up of large quartz grains and bright green granules of glauconite; elsewhere, the lower portion of this greensand is cemented by hydrated oxide of iron into a coarse sandstone, which contains numerous fossils. Below this is a deposit of finer quartz grains, more glauconite, and much clay and mica; and associated with this, a wet sandy stratum called quicksand because it contains a large quantity of water, 8 feet thick; underneath which is a blue earth, or amber-earth, 3 or 4 feet thick, fine-grained and argillaceous (composed of clay). In this the amber is found abundantly, but irregularly distributed, occupying a narrow zone; the pieces are of various sizes, usually small; those weighing half-a-pound being seldom found, and more rarely larger ones of greater weight. The surfaces are worn and rounded, and bear little resemblance to their original form, as the liquid resin of a tree, formed between the bark and the wood, or between the yearly rings of growth of the stem. Fine impressions of the parts of the plants which produced these amber nodules can be distinguished on their surface. Evidently, then, they were for a time subjected to the action of water before they were imbedded in their clayey bed. Pieces of fossil wood are also associated with the amber. When any of the latter is attached to the wood itself, it is so completely penetrated by it, that it has the appearance of amber filaments. The amber-earth contains many fossil sea-shells, echinoderms, corals, &c.; and these show that this Tertiary formation belongs to the oldest or Eocene period of geologists. The amber itself was evidently derivative, and washed down, probably, by floods from the land on which the amber trees grew, into the sea, and there deposited with the marine remains which are now associated with it; although it seems probable that the land was not very far from the shore where it was abundant. Above and below the amber earth, only a few pieces of amber occur. In the south, the amber-earth is thicker, and composed of two different layers. Professor Zaddach of Königsberg shows further that the trees which yielded the amber must have grown

upon previously-formed beds of the greensand when the chalk was deposited, flourishing luxuriantly on the marshy coast which then surrounded the great continent of Northern Europe. Probably the temperature was then higher than it is now, and seems to have extended to the now frostbound Arctic regions; a fact which has been proved by the remarkable plant-remains (chiefly leaves) of temperate climates which have been lately discovered there. The amber flora of the Baltic area under review contains northern forms associated with plants of more temperate zones, and with others even which live in much more southern ones; thus Camphor trees occur with Willows, Birch, Beech, and Oaks, cone-bearing trees resembling the American *Thuja occidentalis*, and a great variety of Pines and Firs, including the Amber Pine, which has been proved to be a true Pine, allied to the *Pinus balsamea*, though it no longer exists. Thousands of these, the professor supposes, might already have perished; and, while the wood decayed, the resin with which the stems and branches were loaded might have been accumulated in large quantities in bogs and lakes in the soil of the forest. If the coast at that time was gradually sinking, the sea would cover the land, and in due course carry away the amber and masses of vegetation into the ocean, where it was deposited amidst the marine animals which inhabit it. But in higher districts the Amber Pines would still flourish; and so amber still continued to be washed into the sea, and deposited in the later-formed (Tertiary) greensand, and still later overlying formation of the brown coal.

Amber has been discovered in Russia, in Italy, probably in Tertiary deposits of the same age; also in Africa, Brazil, and South America, probably derived from strata of this age. It has been met with in Sweden, on the coast of the North sea, and may yet be discovered in many other localities, when the stock is exhausted in the richer Baltic Provinces, and the demands of trade compel the dealers to search for it elsewhere. Vast quantities are washed up on the shore near Memel, also in the Baltic in the extreme north-east, and are thought to have been derived from certain Tertiary deposits containing amber in the extensive adjacent region of Russia and Poland, where brown coal containing amber has been discovered overlying chalk. Stores of this valuable gum still lie hidden in the interior of the country, and on the Baltic coast, though much is, no doubt, still buried under the sea, the amber-bearing stratum often lying too deep to be attainable.

Besides the plants which are occasionally found in amber, the most interesting and remarkable fossils are the insects, which, from their usually beautiful and perfect state of preservation, are more interesting to entomologists than the more imperfect remains of this class contained in many other and older formations, and are therefore more easily determined. As the plants of the older amber-earth in the glauconite series differ from those of the newer brown coal, it is possible that many of the insects would differ also; while those in African amber would present a greater diversity and a more tropical character. As a general rule, all the tertiary fossil insects have a more decided European character, more like recent forms, than the carboniferous, liassic, and oolitic ones; and several kinds are still found living, though many are extinct—that is, are unknown at the present day. From the lucid clearness and beautiful transparency of amber, and its soft yellow colouring, the insects can be easily examined. It would seem that they must have been caught suddenly by the liquid resin as it oozed out of the Pines, and thus were entombed alive, which will account for their wonderful state of preservation. Many of them, no doubt, were caught while on the trees; and even the cunning spider, while watching for his prey, was, like "the biter bit," enveloped also. Others may have been embedded at the base of the trees, where the *ambrosus* exudation was unusually profuse. Amber also contains myriapods, creatures to which the common centipede, scolopendra, and julus belong, and which would abound amongst the decaying wood in the hollows of the trees in the ancient Tertiary forests of the period. When quickly enveloped, the insects and other organic remains are well preserved, retaining their natural colours and their more delicate parts. Those which died, and were long exposed to the air, are more or less injured, and are surrounded with a white mouldy covering, which obscures them, and discolours the amber. This is especially the case in some of the Prussian amber, but has not been noticed in the Pomeranian, which is always bright and clear. The families, genera, and species of insects found in amber are supposed for the most part to agree with existing forms, and even in identity of species. Though many belong to our latitudes, others decidedly do not so, as, for example, some of the smaller flies and gnats, the cockroaches and other beetles, and the majority of the hymenoptera (bees, &c.), which especially resemble exotic forms.

Many different species occur, as at the present day, but only those families are preserved in this fossil resin which are found in wood or

on trees, and scarcely ever water-beetles. As we should expect, many varieties of beetles have been discovered; also bees, ichneumons, and ants are particularly numerous. Moths and butterflies are rare, but have been met with, and several caterpillars. Flies and gnats are extremely abundant, so that the old adage of "flies in amber" is well borne out by the investigations of science. There are also white ants, May-flies, ant-lions, cockroaches, grasshoppers, and locusts. Collections of insects in amber may be seen in the British Museum, the Oxford Museum, and at Berlin. Many of these belong to tropical and temperate climates, approaching more as a whole to South American and Indian forms, rather than those of Europe. While some are like existing species, others agree with no living species, both the insects and plants being extinct. Amongst other curious relics, lizards are stated to occur in Sicilian amber. A scorpion is known in Prussian amber, a genus properly a native of warm climates, certainly never occurring so far north as Dantzic. There are also spiders, more like some found in the south or America. A few of the insects indicate a northern climate. Perhaps, like some of the Lias insects, these were brought down by streams from the higher and cooler regions of a mountainous country adjacent. At all events, we may conclude that the climate and temperature of Europe have undergone considerable change—which other animal and vegetable fossils of the same era prove—since the Tertiary period. The presence of tropical insects testifies that the amber-producing tree did not vegetate under such a climate as that which Prussia, especially the land watered by the Baltic, now enjoys.

As in many other articles of commerce, particularly where we have to deal with gems and precious stones, frequent deceptions have been practised upon the unwary, and even collectors of fossils have been taken in. There is a substance very like amber, gum-anemé, a modern secretion forming at the present day. It exudes from the stem of a North American tree, the *Rhus copalina*, so closely resembling amber, that only a practiced eye could detect the difference; plants or insects imbedded in it would, of course, belong to living genera and species; and it is of little value when compared with the true amber. There are other kinds of resinous gum—namely, gum-copal, used in making varnish, and a gum which is derived from modern Fir trees, but all of recent vegetable origin. All may, however, be chemically distinguished from one another. Thus, anemé is very transparent, and copal differs from it by a faint opalescence and a pale greenish-yellow tinge. True amber, as we have pointed out, is derived, not from a living, but extinct Coniferous tree, perhaps from two distinct trees, though probably a *Pinus*, like the living *Pinus balsamea*, and only existing in the earlier and later Tertiary formations. One certain test to distinguish it from modern gums is, that it does not soften when heated, as they do. To those who are not acquainted with the geological history of this earth long anterior to the creation of man, and the marvellous story which the "testimony of the rocks" has told, it may seem very wonderful that an ancient resinous gum should yield so much of interest and value, not only to the scientific, but to the commercial world. Yet it is not more astonishing than the conversion of vegetable matter into coal, or the formation of masses of limestone rock of vast extent and thickness by corals and little microscopic shells (powerful by their enormous abundance), and which are now making, as in time past, a thick deposit of calcareous ooze at the bottom of the Atlantic. The elaboration of gems, too, in nature's laboratory is an equally striking proof of the inorganic wonders which science has made known to us. No one, therefore, need feel surprised when he sees or reads of "flies in amber," or finds, which, if wise, he will do, "sermons in stones, and good in everything."—*Chambers's Journal*.

Esparto Grass.—I have grown successfully for several years both *Macrochloa tenacissima* and *Lygeum spartum*; the former in a cold frame, and the latter in the open air. Both species have a wide range of habitat and altitude, and I believe might be profitably cultivated in this country as an agricultural crop. Of *Lygeum spartum* I procured seeds from the flanks of the Great Atlas (at a height of 3,800 feet) in 1871, and the plants raised from them have stood out uninjured by frost during the last two winters, flowering in the summers of 1872 and 1873, and attaining a stature of from 2½ to 3 feet. I am not aware that either the *Lygeum* or *Macrochloa* are cultivated in Spain or Barbary, the whole of the exported Grass being obtained from indigenous sources. The interior of Algeria, especially the Hauts Plateaux, is covered with *Macrochloa* for hundreds of square miles, in many places as uniformly as an agricultural crop, to the exclusion of almost all other vegetables. It has a range of altitude from the sea level to a height of over 4,000 feet, so there is little doubt that it would stand a moderate amount of frost.—*GEO. MAW, Benthall Hall, near Brosley.*

ROUGH PLATE GLASS.

SOME twenty years ago there was much discussion about rough plate glass, and a strong impression remained on my mind that anyone wanting to excel as a cultivator ought to use it for any of his structures. Now, six years ago, I erected a span-roofed house half-way sunk in the ground, 30 feet long, 8 feet wide, and 8 feet high in the middle. The house was heated by a common brick flue, and perfect ventilation was a principal point in the structure. The floor of the house being too low to bring the plants near the glass, I could by no means induce them to grow nicely, and, when the dull days of November came, such a quantity of Fungi sprung up that I could not master them. The plants were spindling too, and more leaves than usual decayed. I then removed the rough plate glass and replaced it with good sheet glass, which made an obvious change in the health of the plants; so much so that I will never use rough plate glass again. No doubt this glass is useful for large houses, conservatories, glass walls, &c., but I think it is not satisfactory for general purposes.

Carlsruhe.

MAX LEICHTLIN.

Latitude in Relation to the Hardiness of Plants.—"The latitude of London" is constantly referred to in works on horticulture and arboriculture, as a standard line, at, or more or less beyond, or within which, plants of doubtful hardiness may be expected to flourish. This would be intelligible if the hardiness depended wholly on summer temperature; and I suppose it has an important influence on the question by affecting the ripening of young wood. But the isothermal lines of winter temperature in the British Isles, instead of being lines of latitude, have a direction from south-east to north-west or thereabouts, and the practical question is this:—Taking Liverpool, Lincoln, Warwick, Bristol, and London as five points roughly representing positions arranged like the pips on the five of—Mr. Hole would say—spades, and supposing plants to be classed in three degrees of hardiness, should they be arranged—1. Liverpool and Lincoln; 2. Warwick; 3. Bristol and London, according to the lines of latitude, or should they stand—1. Lincoln; 2. Liverpool, Warwick, and London; 3. Bristol, according to the winter isothermal lines? or, in other words, is Bristol in any more favourable position than London, or Liverpool than Lincoln (assuming exact equality of latitude), apart from all local differences of soil, aspect, exposure, elevation, &c., and speaking in the same general terms as are understood when we read of "the latitude of London"? I ask in order to elicit information, which many of your correspondents can give, and many of your readers will find of value.—J. F. M.

Lovely effects of Autumn Foliage.—A few years since a leading landscape gardener conceived and carried out the idea of so arranging our native trees and shrubs that in autumn, and during the month of October especially, a flower garden, as it were, would be presented to the eye long after the flowers themselves had faded. Now that the selected specimens have grown and rounded the various groups into perfect fullness, the exquisite blending and contrast of colours may well be termed surprisingly beautiful. The scarlet of the Scarlet Oak, the yellow of the Sassafras, the crimson of the Sour Gum and Logwood, the orange of the Red Maple and Sugar Maple in one group, are in these latter days almost dazzling; and then, to heighten the effect, if that were possible, the American Ivy, with its brilliant crimson leaves, and the green Briar, with golden-yellow foliage, twine about and festoon all the undergrowth and branches. This is one illustration of what has been done, and the grounds which it brightens and beautifies contain many other groupings of similar character. Native plants have not been excluded simply because they fail to possess the merit of rarity, but even the every-day and common Sumach is to be seen in groups and singly, wherever its bright scarlet tints can be made tributary to the general effect. Possibly no one species presents such a diversity of colour as the Red or Swamp Maple (*Acer rubrum*). On one leaf we have before now been able to trace ten distinct colours and shades, and all in such harmonious combinations as to create the impression of a direct and special design. There are also many of our commonest native shrubs that can be made objects of beauty by the display of a little taste in planting—as for instance, the Wild Blackberry, with the deepest shade of crimson on its autumn foliage. And we might multiply examples, but enough has been said to illustrate our idea of a neglected phase of landscape adornment. Now is the time to note all the varying tints, for more practical use hereafter, and if the subject receive the attention to which its merits entitle it, the time will come when our foreign visitors will have no occasion to repeat what is now a frequent question, "And why do you not make use of the most beautiful feature of your forests?"—*New York Tribune*.

THE GARDENS OF ENGLAND.

HOLLAND HOUSE.

THIS house, which has few rivals in historic interest, has been recently brought prominently before the public by the Princess Marie Liechtenstein, who has devoted two beautiful volumes to its history. It is, however, the gardens rather than the house with which we have chiefly to deal.

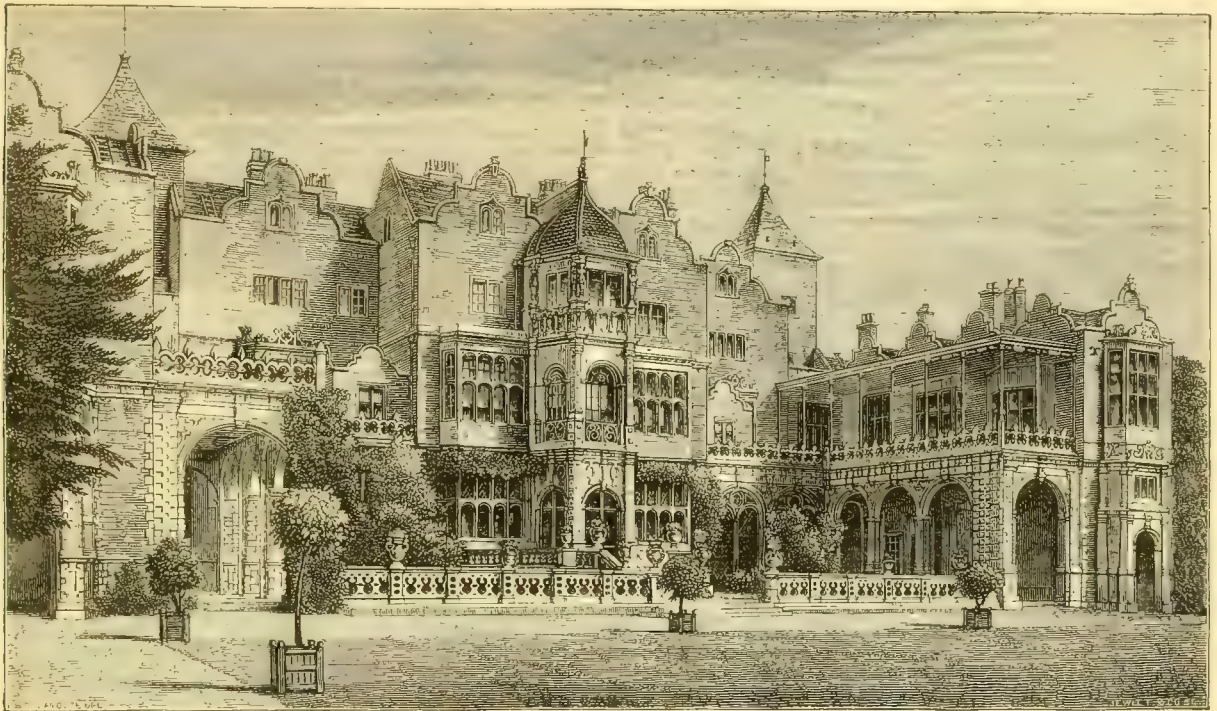
The Dutch Garden.

This garden, which is one of the finest examples of the kind to be found in England, is bounded by a fruit-tree wall on the north side, by the west end of the house on the east, hedges and shrubbery on the south, and an arched terrace and hedges on the west. Along the base of the wall is a series of double-diamond shaped beds, with intervening small beds of the same form in the middle, and corresponding small triangular figures on the outside. The chief series of beds consists of patterns of scroll-work in great variety, and includes several large central masses. All these beds are heavily bordered with

A little in front of this seat are two fine evergreen Oaks, annually clipped into close compact piles, two large bushes of Box, a spacious flower-bed, and hedges of Box and Yew.

The Italian Garden.

Still continuing westward, we pass under arches clothed with Ivy, as shown in our illustration (see p. 494), on to the terrace beside the Italian garden, of which, as of other views, through the kindness of the publishers of "Holland House," we are enabled to give an illustration. These arches, so prettily draped with Ivy, are about 15 feet high. A dwarf wall bounds this terrace, and is surrounded in the summer time with vases at intervals, tastefully filled with flowers. At the base of this wall is a border laid out in beds. The Italian garden consists of moderately-sized beds heavily edged, like the Dutch garden, with Box. Vases, too, are here disposed at certain intervals. Between this garden and the extreme western boundary, is an open slope of lawn, which was at one time the fruit and kitchen garden, and which still bears traces of the use to which it was applied, for, instead of the usual lawn trees, it is dotted all over with specimens of



Holland House—South Front.

Box, the dark green colour of which contrasts well with, and tones down materially, the richly-coloured flowers of the bedding plants employed in the decoration of this garden. The larger beds are filled with Roses that are annually pegged down so as to fill up the space and prevent over-pruning of the young wood. When it is necessary to ensure extra neatness, they are pegged down when in a young and green state; but this is objectionable so far as the wood treated in that way is not ripened so effectually as if allowed to grow in a more natural manner; and ripe wood alone bids defiance to frost in winter, and secures abundance of flowers in summer. As centre pieces, there are a fountain, a sun-dial, and a bust of Napoleon I. In the wall, near the western end, is an alcove or recess, known as "Rogers's seat," overrun with Ivy and other creepers; and on either side of it the family name is represented in Box by the figure of a fox. The following inscription, dated 1818, occupies a tablet above the seat:—

Here Rogers sat, and here for ever dwell
With me, those pleasures that he sings so well.

and under these are other lines in Luttrell's handwriting.

the Cluster Golden Pippin, a variety of Apple that yields abundance of fine flowers in spring and showy fruit in autumn. These present, however, more the appearance of evergreens than deciduous trees, on account of the immense quantities of Mistletoe which they support. Mistletoe also grows here on an Acacia, which the gardener, Mr. Dickson, informs us is the only instance of the kind with which he is acquainted. There are also Walnuts, Medlars, and other fruit trees growing on this lawn.

The House.

The house itself will be found to be a good example of the Elizabethan style of building. On its south are two terraces, which cut it off from the park. The front of the house is, to a considerable extent draped with *Wistaria sinensis*, which, when in flower, in spring and early summer, is strikingly pretty. Specimens of *Magnolia conspicua*, too, on either side of the central staircase, have a fine effect when covered with snowy flowers. The Maiden-hair tree (*Salisburia adiantifolia*), planted close to the walls many years ago, so outgrew the bounds assigned to it, that it had to be cut down close to the ground. Since then, however, it has sent up three leaders, each of

which measures some 20 feet in height. At the south-west corner is a staircase ornamented with vases and overhung with foliage. Extending southward from it is a row of trees, principally old specimens of English Yew, the boughs of one of which droop over the steps in the form of an archway. At the west end of the house is a court which, in order to be hidden from the windows above it, has been covered over with a trellis-work, clothed with Virginian Creepers and Laburnum trained flatly over it. In this a grand effect is produced between the "drooping gold" of the one, and the abundant spray of the other.

The Conservatory and Orange Trees.

The conservatory forms one of the most remarkable features of these gardens. It is 80 feet long, and is divided into three longitudinal compartments, the central one being 16 feet wide, flat and dark above, and arched on either side, the others forming, as it were, two lean-to houses at the sides. In the central portion are wintered the magnificent Orange-trees for which this establishment is celebrated, and, in summer when clear of plants, it forms a portion of the ball-room, and is adorned with statuary, the archways being ornamented with hanging baskets of plants, while the columns and the roof are draped with climbers. At the end of this conservatory, turning eastward, is a colonnade that leads to the ball-room, the pillars of which it is constructed being well furnished with Ivy and Virginian Creepers intertwined (the effect of which in autumn is charming), *Aristolochia Sipho*, *Wistaria*, *Jessamines*, and *Roses*. The Orange-trees at Holland House are perhaps the most remarkable objects in the garden. From October to May they are stored in the conservatory, and during the summer months they are placed out of doors on the terraces, and the very largest ones on a gravelled square at the south end of the conservatory. They chiefly consist of the bitter Orange, and are all grown in tubs about 4 feet square, and 4½ feet high. They are mostly in the form of standards, with clean trunks, varying from 3 to 7½ feet in height, and have densely-branched heads, about 9 feet through, thickly furnished with large dark green leaves, and, in their season, abundance of flowers and fruit. The height of the trees, measuring from the bottom of the tub, varies from 13 feet to 16 feet. There are, however, a few smaller specimens in little tubs and in pots, also plants of *Clethra arborea* and *Myrtles*, which are used for the same purpose as the Oranges.

Avenues and Remarkable Trees.

The house is approached from the Kensington Road through an avenue of stately Elms, and at its junction with what is termed "Louis Philippe's walk," is a cast of the statue of Charles James Fox, which stands in Bloomsbury Square, and which was presented by Westmacott. The Louis Philippe walk derives its name from the fact that the exiled king spent a quiet hour under the shelter of its trees during a visit which he paid to Holland House in 1848. On the northern extremity of the domain is a walk 10 feet wide, planted on either side with Lime-trees and scarlet-flowered and other Thorns are planted some yards distant on the north side. The Limes are planted quite close to the walk, and only 7 feet apart, the object being in due time to construct over the walk a leafy tunnel, arched at the sides, so as to allow surrounding objects to be brought into view. At the end of this remarkable arcade begins the famous Green Lane, or "Nightingale Lane," as it was once called before bricks and mortar had driven these favourite songsters from the neighbourhood. This forms a western boundary to the pleasure-grounds. It consists of a broad Grass-walk, over-canopied with Elms, Planes, and Chestnuts, that rise up from amid an undergrowth of Hollies, Yews, and other shrubs, through which, here and there, are openings on to the lawn. Deciduous trees thrive remarkably well in these grounds; but evergreens, especially Conifers, are not so satisfactory. Even Cedars of Lebanon, that withstand smoke better than most Conifers, are dying out. One old tree of this kind—the last of a clump of them—still, however, occupies a conspicuous position on the north side of the house. It has lost most of its branches, and is fast following its companions, the last of which was broken down by a snow-storm a few years ago. Another old Cedar still standing, has a clear trunk some 10 feet high and 18 feet round. There are also a few fine trees of *Liquidambar* in the grounds, some

of which measure about 4½ feet round the stem and 60 feet in height. Of *Planera Richardii* there is a specimen with a trunk some 10 feet in circumference; and of the common evergreen Oak we observed a beautiful specimen, with a closely-branched head 60 feet through, and a stem 10 feet round. The stem represents a clean log of timber, rising up with a swollen base at the junction of the graft with the stock. Near the north-west corner of the Dutch garden there is a fine old English Elm, which has a gnarled trunk 18 feet round at 3 feet from the base. It has lost some of its largest limbs, and the places from which they have fallen are now covered with zinc to exclude wet from entering the trunk, thus preventing decay. Of the deciduous Cypress, one tree measures 8 feet round near the base; but it is destitute of the root "knees," which are characteristic of this Cypress. Of *Catalpa syriaca* there are several good specimens scattered through the grounds; but the finest is perhaps at the north-eastern corner of the house. The diameter of the spread of its branches is 40 feet, and they are very numerous, and annually produce an abundance of flowers. Some of the branches of this tree stretch out so far, and become so heavy, as to require support. Near this *Catalpa* is an old specimen of Weeping Ash, whose pendulous branches cover a space 40 feet square. Of the Kentucky Coffee-tree (*Gymnocladus canadensis*) there is also a specimen about 40 feet high, with a trunk 3 feet round; also good examples of the true Service-tree, and very large plants of *Ailantus glandulosa*, as well as a rich collection of Hawthorns.

The Fruit and Kitchen Garden.

In these there is a very fine Peach house 15 feet high at the back, with rafters 16 feet long, and heated with one row of 4-inch pipes. The back wall and a front trellis are furnished with trees, under which are also several pot plants, which, notwithstanding their shady position, yield good crops useful for culinary purposes. At this season Lettuces and Endive are grown in this house. The kitchen garden, properly so called, lies a short distance to the south-west of the fruit garden. It is crossed by a broad Grass walk bounded on either side by espalier Pear-trees trained on a wire trellis, which annually bear a plentiful crop of fine well-flavoured fruit. The trees are all worked on the Quince, and comprise Beurré Diel, Glou Morceau, Passe Colmar, Duchesse d'Angoulême, Napoléon, Williams's Bon Chrétien, and some others. The forcing-houses consist of a lean-to range, divided into compartments for Peaches, Vines, Figs, and flowering and fine-leaved plants. There is also a Mushroom-house at the back of this range, and a considerable quantity of frames now well filled with bedding plants.

Our notice of "Holland House" would be incomplete if we omitted to record our high appreciation of the tasteful and artistic manner in which Mr. Philip Delamotte has illustrated the Princess of Liechtenstein's volumes.

THE VOICE IN THE PINES.

WHAT voice is this? what low and solemn tone,
Which, though all wings of all the winds seem furled,
Nor even the zephyr's fairy flute is blown,
Makes thus for ever its mysterious moan
From out the whispering Pine-tops' shadowy world?
Ah, can it be the antique tales are true?
Doth some lone Dryad haunt the breezeless air,
Fronting you bright immitigable blue,
And wildly breathing all her wild soul through
That strange unearthly music of despair?
Or, can it be that ages since, storm-tossed,
And driven far inland from the roaring lea,
Some baffled ocean-spirit, worn and lost,
Here, through dry summer's dearth and winter's frost,
Years for the sharp sweet kisses of the sea?
Whate'er the spell, I hearken and am dumb,
Dream-touched, and musing in the tranquil morn;
All woodland sounds—the pheasant's gusty drum,
The mock-bird's fugue, the droning insects hum—
Scarce heard for that weird sorrowful voice forlorn!
Beneath the drows'd sense, from deep to deep
Of spiritual life, its mournful minor flows,
Streamlike, with pensive tide, whose currents keep
Low murmuring 'twixt the bounds of grief and sleep,
Yet locked for aye from sleep's divine repose!

—P. H. HAYNE.

THE FRUIT GARDEN.

BIRDS VERSUS GRAPES.

CONSIDERABLE difficulty is sometimes experienced in preserving Grapes from birds, as it is often advisable to open the doors as well as the usual appliances for ventilation, more especially during hot days in summer and autumn. Our illustration shows at a glance how this is effected by Mr. Barron in the Vineries at Chiswick. The method, which is as simple as it is effectual, consists in placing a sheet of white or brown paper over the top of the bunch just where our feathered enemies commence their depredations. The same end is also attained by enclosing the clusters in loose bags of tiffany or hexagon netting; and in this way wasps and flies, as well as birds, are likewise kept in abeyance. Care must be



taken to examine the muffled bunches during dull wet weather, as these coverings induce the berries to damp and rot. B.

AUTUMN AND SPRING PLANTING OF FRUIT TREES.

In the autumn of the year 1868 I planted a young Mayduke Cherry in a border which a Moor Park Apricot had previously occupied. The latter is now growing trained on the south wall of a cottage not far from my house. It found its way there under peculiar circumstances, indeed its history is altogether remarkable. About the year 1843 it was planted against a west wall 10 feet high, where it grew and in due time bore fruit; and in one season, after it had filled its allotted space, it produced an enormous crop, having been thinned three times in the spring, and leaving an abundant supply to ripen in autumn. I do not think that this was altogether the cause of its not doing well in the fruit seasons that followed. I was assured that it had only a limited space in which the roots could find good soil, and that they could not be prevented from penetrating the bad sub-soil in the course of time. So, finding the tree did not thrive, I resolved to root it out and pave the bottom of the border with concrete before I planted the tree that was to occupy its place. Accordingly, the Apricot was dragged out with little ceremony and thrown into the wood-yard, where it remained for a few days; but having been noticed by a labourer then in my employ, it was at his request allowed to be transferred to his own garden, where it is now flourishing and has borne fruit. Its removal after five-and-twenty years of undisturbed growth would have been hazardous under the most favourable conditions. No care whatever, was taken in its removal; I can only attribute its surviving such rough treatment to the favourable period chosen for lifting it, namely, the early part of November. In contrast to this remarkable instance of tenacity of life, I may mention that, wishing to have further proof of what amount of ill-usage a fruit tree could bear, I purchased in March a young and well-rooted specimen of the Sturmer Pippin from a man who was passing in a cart with a few trees which he wished to dispose of. By well-rooted I only mean that the tree had a good supply of roots, but they looked dry and miserable and almost devoid of fibre. Could it only have been gifted with the power of speech, I have no doubt it would have been able to tell me how many times it had been taken to and from the markets,

as well as the names of the places it had visited. Determined to give it every chance, I planted it at once with the greatest care; but after a feeble attempt to put forth leaves, it did just what I expected from the first—died. People are very foolish to go to a market to purchase fruit trees, when they can always get them in a fresh and healthy condition from the nurseries in autumn, before their roots have been exposed to the cutting winds and frosty air of winter. B. S.

PEAR GROWING IN VIRGINIA.

THE following are a few remarks concerning the Duchesse d'Angoulême Pears sent from Norfolk by Mr. Leighton. Mr. Leighton is a friend of the Honourable Marshal Wilder, of Boston, and is considered the best grower of this Pear in America. He has taken first prizes with his Pears, both for flavour and weight, against others of the same kind sent from California. Many of his fruit weigh as much as 30½ ounces each. They are grown as dwarfs on the Quince stock. On the 31st of August last he had 3,000 trees of Duchesse d'Angoulême, with about one bushel on each tree, and 1,500 Williams's Bon Chrétien; and when Pears of the Duchesse variety sent from California are selling at 9 dollars per bushel, he has sold his at 12 dollars, and his Williams at 11 dollars. He grows a finer flavoured Seckle Pear than any I have tasted in England; he has also a fine Pear supposed to be a cross between the Williams's and Flemish Beauty, raised by a Mr. Clapp, of Rochester. This variety comes ripe into the market ten days earlier than the Williams's. It is ripe here in Virginia on the 20th of July, and would, I think, be a fine early Pear in England. The Duchesse d'Angoulême commences to ripen here about the 20th of August. Mr. Leighton has an experimental orchard of 1,800 trees—sixty-six varieties of the best-known American and English kinds. His orchard trees are from one to four years' growth. The soil is a stiff bluish clay, from 3 to 7 feet deep; sub-soil, sand. The land is well drained 12 feet above tide-water, in a healthy district. The trees are planted 12½ feet apart; holes were made for them 3 feet wide and 3 feet deep. The drainage is made into the sand with an auger, and the hole is filled up with oyster-shells. No other crop is taken off the land, which is sown down with Grass. This Pear farm is 62 acres in extent. The wood, I noticed, ripens thoroughly close up to the tips of the shoots, even as early as the end of August, and the trees bear every year a full crop. From 600 trees Mr. Leighton has taken 140 bushels of fruit to market as thinnings, and had still a good crop on the trees.—JOSEPH NEWTON. [Some of Mr. Leighton's Duchesse d'Angoulême Pears sent from Virginia to Covent Garden this year were most remarkable, both as regards size and flavour.]

ROOT-PRUNING.

ROOT-PRUNING, as I understand it, consists in lifting, and to a greater or less extent pruning and cutting back many or few of the larger roots, according to the particular views of the operator; or the term root-pruning may be applied when the roots are cut or disturbed, whether that operation extends to the lifting of the tree, or merely that of digging round, and cutting the roots at a certain distance from the stem. If a tree is lifted and re-planted, can this be aught but another term for root-pruning? As to the practice itself, under certain circumstances I think it invaluable; that is, when trees are grown in cold clay soils. In several instances in situations of this kind I have seen the practice productive of results quite astonishing. In light and dry situations, on a gravelly sub-soil, I have never seen it tried, and should be inclined to believe that in such cases but little good would result from it. I should not like to go quite so far as to advise every one who has stone-fruit trees in a naturally cold sub-soil to dig their trees up and re-plant them every two or three years, as has been recommended by some; but from what I have seen I think all persons situated in that way would act wisely to do so. The trees should be habituated to this treatment; for if not so it is just possible that in lifting a tree which had not been disturbed for a considerable time, the roots having become thick and strong, such a tree would necessarily feel the sudden and unaccustomed check; but when the treatment is steadily pursued nothing can be a simpler or safer practice for Peach and Nectarine trees, and also Apricots, Plums, and Pears, and I may add for Figs also. This is the secret of fruit-tree culture: Regulate the growth not by top-pruning, for this is contending with an effect—control the cause: that is, treat the roots so as to make them produce the quality of buds and branches which you require. This I hold to be the real secret of true cultivation as regards fruit-trees under certain circumstances. Branch-pruning can never be productive of any settled and permanent effects. It is but an effect itself, and the cause which

produces it must be dealt with before any permanent result can be looked for. Root-pruning, or, if the term be liked better, frequently lifting and re-planting, can only be productive of really permanent effects. R.

Irregularity in the Breaking of Vine Buds.—Allow me to say a few words concerning two Black Hamburgh Vines that occupy nearly the centre of my house. Forcing was begun last year during the last week in November; and, contrary to anything I had ever seen, about one-half of the spurs, from the bottom to the extremity of the Vines, broke in the course of a month, grew vigorously, and produced good-sized bunches, and were nearly in flower before the remaining spurs showed signs of vegetation. Nor did the remainder come into leaf at the same time, as, in several instances, nearly a week intervened; but each shoot produced bunches in size equal to the former. When the Vines were pruned, many of the spurs were not fully ripened, that is, they were rather "spongy;" so we can easily conceive that when the sap begins to ascend, it will enter wood of this kind with more freedom than that of a denser character, as it is to a certain degree charged with fluid of the preceding year. Every experienced gardener knows that succulent shoots vegetate in a shorter time, and under less excitement, than when the wood is perfectly matured; but the flowers are neither so numerous nor so robust. The same is applicable to the Grape Vine: when the wood is unripe, the mere rudiments of a bunch are exhibited, which ultimately become tendrils. No doubt there are connected with this several predisposing causes, such as an undue abstraction of light, and a too high temperature; but I am under the conviction that a deficiency of secreted matter constitutes the primary defect. —C.

Iron Filings for Fruit Trees.—Please inform me if these are beneficial to old Apple trees, and how to apply them.—P. H. J. [To this question Prof. Johnson, in the *New York Tribune*, replies as follows:—"The statement that iron filings have a marvellous effect on fruit trees is one that has long been floating through our horticultural literature, and I don't doubt that they can be applied to old Apple trees in a way that will immensely benefit the latter. I should say that if the iron filings be well dug in all over the orchard, or for an area extending 30 feet from each tree, all around, the result would be very striking. If the iron filings should be mixed with some good old compost, and some wood-ashes, and some bone-dust, I doubt not that the effects would be interesting. To go further, I would venture to prophecy that the thorough digging, and the compost, ashes, and bone would do the business without the iron filings. I once heard that a powerful medicine would best show its remedial influence on the human body if put into a hole bored in an axe handle, the hole plugged up, and the axe used by the patient to chop 50 cords of wood. I imagine iron filings to work much in that way. Iron is, indeed, indispensable to the health and the growth of plants, but the quantity they use is so small, being not more than one part to 10,000 or 20,000 of the plant, and iron is so abundant in all soils, rarely less than several per cent., that the application of iron as a fertiliser is not likely to be generally beneficial. Old Apple trees that "need something" to improve their bearing, usually suffer from the circumstance that the soil in which their roots are imbedded has been robbed of its plant-food by Hay crops, or has got compacted and incipiently petrified by lack of tillage."]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Large Peach Tree.—At Eslington Park, Northumberland, the seat of Lord Ravensworth, there is a splendid Peach tree, well furnished with bearing wood from top to bottom. It measures 31 feet each way from the stem, and the height of the wall is 10 feet. The gardener, Mr. Oliver, informed me that it never fails to bear a crop, and that he planted it thirty years ago. The border in which it is planted received no extra preparation, and yet the result has been most satisfactory. The sort is the Royal George.—J. S. S. *Ganton*.

Two Good Cherries.—The *Florist and Pomologist* for this month contains a coloured plate of two of our best kinds of Cherry, viz., Early Rivers and Monstrous Heart. The former is a seedling of the old Early Purple Gem, raised by Mr. Rivers, and combines the early-ripening habit of its parent with a harder constitution. The other, also known as Bigarreau Gros Cœur, is a very old variety, producing large-sized fruit, of a golden-yellow colour, splashed and streaked with bright red when ripe. The fruit is juicy and richly flavoured, and ripens in the middle of July.

Budding versus Planting Vines.—I have a Viney, in which the results are unsatisfactory, from the injudicious mixture of sorts, which consist of Lady Downes, Muscat, Black Hamburgh, and Buckland's Sweetwater, all of four or five years' growth. I am desirous of discarding the two latter, and substituting either White Lady Downes, or some other which will ripen along with those retained, and can be kept hanging as late as possible. I wish to know whether the White Lady Downes or any other, and what kinds, which will answer my purpose, can be successfully budded on the old stocks, or whether I had better sacrifice the stocks and re-plant? To another house the same question is applicable, except that I wish to bud with Muscats on similar stocks or re-plant. —J. F. M.

CONSERVATORY IN THE PINE-APPLE NURSERY.

THIS well-known nursery, which has long enjoyed a distinguished reputation, has lately entered upon a new phase of existence, under which its attractions have become greatly increased. Since the company under which it is now placed have undertaken its management, building, heating, and the renewal of stock have been carried on on an extensive scale, and a winter-garden built, which, so far as we know, is the finest in any nursery-garden in existence. Our page illustration shows a view of a portion of the Fernery and rock-work section of the house. This is a very desirable feature to introduce into all large structures of this kind. There is certainly no structure about London fitted to hold such a large number of specimens of the cool-house Palms and other stately plants, now happily becoming so much sought after; and some of these already gathered here are shown in our engraving. Conspicuous in the collection of plants in this house are some fine Palms, Bananas, Tree and other Ferns, Rhopalas, and other strikingly ornamental plants. Whether viewed from the Edgware Road, or from the interior, the eye is pleased with the lightness and well-conceived proportions of the house. Along the Edgware Road it has a frontage of 140 feet, and along the Hall Road one of 100 feet. Upon the principal elevation, that towards the Edgware Road, the builders, Messrs. Weeks & Co., have bestowed a good deal of appropriate decoration. The base is formed by a dwarf wall about 2½ feet in height, having a series of perforations which are furnished with a corresponding number of ventilators. These are of an ornamental character, and, while serving a useful purpose, break up the monotony of a plain wall, which would otherwise detract from the general architectural effect of the elevation. The main lines of the front form an elaborate framework, chiefly in wood, and this, enriched with deeply moulded bases, spirally carved columns, foliated caps, massive cornices, sunk panellings, and sculptured ornaments, furnishes a façade worthy of its position. As regards the form of roof employed, covering the centre is a noble span, surmounted by a wide lantern, the side sashes of which are made to open by means of machinery. By this arrangement air can be introduced during all weathers, and rain will always be excluded from the building. Facing the Hall Road is a ridge-and-furrow roof of good proportions; while in front are two semi-circular roofs, which serve to heighten the effect, and improve the general appearance of the building. As regards the interior arrangements, they are of the happiest kind. The laying out is in part in the "natural" style. Large specimens are planted in beds fringed with Ivy and other evergreen creepers. In the centre stands a large basin and fountain, which, with an effective piece of rock-work, miniature cascades, an aviary, and other surroundings, form a scene seldom found in commercial establishments of this kind. Passing from the conservatory to the department specially devoted to production, we traverse a series of houses of various dimensions, and assigned to distinct purposes, the united length of which exceeds 2,000 feet. These contain a good display of Cape Heaths, both as to number and variety, also some very fine examples of New Holland plants, for which this nursery has long been famous, Camellias, Azaleas, and stove plants, all in excellent condition. The same energy to which we owe the noble glass-house facing the Edgware Road is also busy in this department; and a recently-finished house here is one of the most remarkable span-roofed stoves in the country. Filled with young specimens of the best fine-foliaged stove plants now growing rapidly under the skilful culture of Mr. Bester, the manager, it is likely soon to offer much interest to lovers of choice plants. The heating apparatus deserves a passing remark. The system employed is that known as "Weeks's one-boiler system," and we are assured that the total extent of piping constituting the one apparatus exceeds 2 miles in length. The number of compartments, warmed both at top and bottom, is about seventy, which can be either heated separately or together, and the temperature of each can be regulated to the greatest nicety. One boiler efficiently warms the whole, but duplicate boilers have been fixed, so that, in case of repairs being required, either boiler can be removed, or re-connected without withdrawing the water from the apparatus.

VIEW OF A PORTION OF THE FERNERY IN THE NEW WINTER-GARDEN AT THE PINE-APPLE NURSERY.



THE FLOWER GARDEN.

THE PROPER TIME TO PROCURE CUTTINGS, BULBS, AND ROOTS.

As a general rule, it will be found that cuttings strike root more freely during the spring or early summer months than at any other time. The professional horticulturist, who has abundant means at his disposal, pays but little attention to this rule; but the amateur, with limited appliances, will find that cuttings, which root freely during the bright sunny days of spring, only damp off and decay as the days are on the wane. Most plants start into growth during the early part of the year with renewed vigour and increased vitality, while, during the damp and foggy days of autumn and winter, vegetation is more sluggish, and, in many cases, is nearly suspended altogether. Amateurs are often at a loss how to obtain cuttings, but they are frequently advertised in horticultural periodicals during the spring and summer months at a trifling cost, as compared with the prices asked for established plants. Nearly all the new and attractive varieties of Fuchsias, Pentstemons, Antirrhinums, Geraniums, Chrysanthemums, and other soft-wooded plants which strike freely, may be obtained in this way. The following list of cuttings and the times to obtain them, may be useful to some of our readers:—

	From		From
Antirrhinums	March to Sept.	Pentstemons	March to Sept.
Arabis	" "	Perunias	" to June.
Bouvardias	" "	Pinks	June to Aug.
Bedding Plants	Feb. to Oct.	Piceas	" "
Beronias	March to Sept.	Phlox	March to Sept.
Calceolarias	" "	Solanums	Feb. to April.
Carnations	June to Aug.	Tropeolums	" "
Cinarrarias	" "	Variegated Ivies	" "
Coleus	March to Sept.	Verbenas	" "
Centaurea	" to Aug.	Veronicas	" "
Chrysanthemum	Feb. to May.	Violets	" "
Dahlias	" to June.	MISCELLANEOUS.	
Dracenas	March to June.	Dutch Bulbs	Sept. to Dec.
Fuchsias	" to Sept.	Herbaceous Plants	" to March.
Geraniums	" "	Flower Seeds	" to Jan.
Heliotropes	" "	Hardy Bulbs and	
Lupinus	" "	Orchids	" to May.
Pansies	May to Sept.	Evergreen Shrubs	" "
Pelargoniums	March to Sept.		H.

THE MANETTI ROSE STOCK.

NOVEMBER and December are the best months for planting cuttings of this stock. They are prepared in the following manner:—Take the strongest shoots you can procure of the season's growth, and cut them into lengths of about 10 inches. Some of the long shoots will make two cuttings. After preparing the number required, whether it be hundreds or thousands, the next operation is to cut off the spurs, and with a good knife gouge out every eye or bud, except two or three at the top. It is necessary to be very particular, for if the eyes are not cleanly gouged out, suckers will rise up to torment you, and in all probability ultimately kill some favourite Rose that you have taken great pains with in budding. It has been said that a Manetti which has been divested of all its buds will occasionally throw up suckers; but my experience leads me to a different conclusion. When Manetti stocks send up suckers, it is owing to the operation of cutting out the buds having been either carelessly or inefficiently performed, as is the case sometimes when the work is entrusted to boys. The next step is to choose a situation for planting the cuttings; when this has been done, lay on the garden line, and with the spade throw out some soil, by making a small trench to receive the cuttings, which must be planted so deep as only just to leave out the few eyes at the top; they should be planted about 4 inches asunder, in rather a slanting position; the soil should be trodden firmly when filling it into the trench again. Almost every cutting will grow. The following year, about November or December, the cuttings must be carefully lifted with a spade or fork, when it will be found that the stems have rooted for their whole length. The whole of these roots must be cut off carefully, except a few at the bottom of the stem or base; if any spurs or thorns are found, they must all be cut off, so as to leave the stem clean for budding on. Care must be taken during this operation not to let the young roots get dry. When a few of these rooted cuttings are dressed, it is best to lay them down on the soil, and cover the roots in a temporary way, until you plant them out finally for budding, which is better done at once, or as quickly as time will allow. When they are finally planted out, the garden line must be laid on, and the rooted cuttings must be carefully

planted into a richer soil than for cuttings, but this time only about 2 inches deep, or very little more, the object being to insert the buds as near the roots as possible. The distance from plant to plant should be about 12 inches, and the rows 3 feet apart, so as to give sufficient room to walk between the rows. Any of the cuttings that have made good growth should have the tops cut in to two or three eyes. About July or August, your Manetti stocks will be in a fit state to receive the buds; one bud only is to be inserted in each stock. The operation of budding is performed by inserting the bud into the stem or leg of the Manetti, as near to the ground as it is possible to work. There is this difference between budding on the Manetti and the Briar—that buds on the Manetti are inserted into the old wood of the main stems; whereas those on the Briar are inserted into the young wood of the same season's growth, on lateral shoots, and as close to the main stem as you can get. In order to be successful in Manetti budding, it is necessary to have firm, plump, and well-ripened buds. Many buds that would succeed on a Briar would fail to take on a Manetti stock, on account of the buds not being ripe and well developed. The Manetti stock, on account of its rapid and free-rooting action, is very vigorous and full of sap; so much so, that some varieties of free-growing Roses commence growing away soon after the buds are inserted, and unless the shoots ripen the winter kills them; hence it is advisable not to bud Manetti stock until August, at which time firm well-grown buds are easily procured. Early in the spring the dormant buds begin to grow; but, in order to force them to grow freely, the greatest portion of the Manetti shoots growing above the buds must be cut in rather close. When the buds have made growth about 3 or 4 inches, the heads of the Manetti must be cut away altogether. Should any of the buds prove obstinate in starting into growth, it is better to break the Manetti stem above the bud, and let it hang down, than to cut it away altogether, as it still draws some portion of sap to the bud. The head of the stock should never be cut away altogether until the bud has made sufficient growth to draw sap to support itself. To understand the regulation of the sap is one of the principal points in budding. In the month of May the Rose grows away in earnest, and each Manetti Rose should have a stick or some support thrust into the ground close to it; and, as the shoot grows, it should be tied to the stick with matting or worsted. If this is not done, you are in danger of losing some of your Roses by high winds, which would break the shoots out of the place where the bud has been inserted. Cuttings of Gooseberry and Currant trees are treated in the same way exactly as Manetti cuttings. You then get trees on a clean leg, and suckers never shoot from below. Lose no time in getting in your cuttings, so that they may have the benefit of the cool moist months of winter, in which to form callosities, from which ultimately proceed the roots.

H. T.

White-flowered Lobelias.—There are so few white-flowered bedding plants that any addition to their number must be considered a desideratum; such will be found to be *Lobelia White Brilliant*, the flowers of which are of the purest white. Its habit, too, will be found to be all that can be desired, being close, erect, and not more than 4 inches high. It is, in short, the exact counterpart of that beautiful and well-known blue variety *Brilliant*, and it will, doubtless, become quite as great a favourite. We have had several whites belonging to the speciosa section, for instance, in 1860 we had compacta alba, in 1865 Princess Alexandra, in 1867 White Queen, in 1868 Queen of Whites, in 1869 speciosa alba, in 1871 Parity and White Perfection, of which the last named is much the best, as it is pure in colour, but not all that is required as to habit. Compacta alba is not exactly of this type, but it was the only pure white-flowered Lobelia until White Perfection was sent out, all the rest being either more or less tinged with blue, or having blue top lobes, and a spreading habit. I have seen White Perfection from the same stock in two places in one day, and quite different in habit: at the gardens, Kensington Palace, it was very tall and rather straggling, and at St. Stephen's Square, Westminster, it was not much more than half the height.—R. H. B.

Wintering the Rice-paper Plant.—The usual mode of wintering this plant is in greenhouses; even those used in the flower garden in summer are taken up in October, potted, and stored under glass. Such, too, is the safest plan, but where stock is plentiful, the plants strong, and have been growing out of doors during summer, the following plan, which is practised at Battersea Park, may be tried:—Mulch the ground over their roots with leaves or litter, and twist a straw or hay band around the stems of the plants. In spring, by pruning back to prominent eyes in the old wood, the plants soon start into growth, and progress vigorously, amply compensating with large and broad leaves the care bestowed on them. As soon as all fear of hard frost in spring is over, the bands may be removed.—W. F.

THE ARBORETUM.

ON DIFFERENT METHODS OF PRUNING FOREST TREES.

By ANDREW GILCHRIST, Urie House, Stonehaven.

If we are not mistaken, the great arboricultural want of our day is a correct and comprehensive knowledge of the first principles of arboriculture. At present there is no want of empirical rules, founded on a practice that is supposed to be successful; but, as a general rule, these empiric systems are not reliable. And the man with a scientific knowledge always doubts them until he has fully tested them, and found them in harmony with the laws of vegetable physiology. A thorough knowledge of these laws, and then the earnest endeavour to harmonise our various operations, so that they may become as mild in their opposition to these laws as possible, is beyond all question the proper method to obtain a uniform and definite system of practice, founded on accurate and undoubted first principles. In pruning, perhaps more than any other department of practical arboriculture, we have it within our power to adopt an almost uniform system of operation; but, for want of due attention being paid to sound and definite fundamental principles, there is scarcely a point on which absolute unanimity of opinion or practice exists. I do not mean to assert that an absolute law could be laid down that would be applicable to every peculiarity of kinds and ages of trees, so that the precise time to operate at the first and all subsequent prunings could be determined without first having examined and acquired a knowledge of the trees to be operated on. A certain amount of practical skill, along with an intimate knowledge of general first principles, is essential to determine this in a judicious manner. But I consider it quite possible to attain to absolute unanimity in regard to the system of pruning that is to be adopted; and, in fact, I would almost say that the Scottish Arboricultural Society has but very inadequately fulfilled its mission so long as there exist so many conflicting opinions in regard to this subject. An impartial inquiry into the advantages of the different methods of pruning will doubtless be well calculated to assist in arriving at the best system. By testing the one system against the other, we may find how far each can be applied judiciously and successfully to the various peculiarities of individual trees, so as to best bring about the fundamental object of pruning, which is the ornamental appearance, or the production of the greatest amount of thoroughly sound and clean timber. By thus, as it were, comparing the capabilities and the results of the application of the one system with the other, we may be able to discover which is most conducive to the direction of the nutritive energies of the tree, so that the greatest proportion of the nutriment will be appropriated to the elongation and increase of the circumference of the stem, rather than to the production of contending leaders and strong side branches. If this be (as it doubtless is) the primary object of pruning, then the great art of the pruner is to prevent the formation of these overstrong side branches, and, by timely checking, to restrain and control them, so that they may become subservient to the extension of the stem, and be made to contribute to the growth and production of a sound bole of timber, and not be left to increase their own growth to an extent that will be prejudicial to the tree.

Close Pruning.

Let us now proceed to compare the system of severe close pruning (i.e., clearing off a great number of the branches from the stem without doing anything to check the growth of contending tops) with the system of foreshortening. The leaves being part of the vital energies of the tree, it follows that to cut off the greater part of the branches and the leaves is just removing a number of the most essential organs, and thereby diminishing the rate of growth to a considerable extent. Close pruning utterly fails in bringing about the object in view, namely, the production of the greatest quantity of sound and clean timber.—1st. Because it tends to reduce the vital energies of the tree.—2nd. It does not check the growth of contending leaders or overstrong side branches, nor prevent them from appropriating the nutriment to increase their own growth rather than that of the stem.—3rd. It tends to deteriorate the quality of the timber; for, when the wounds made on the stem are greater than can be healed over during the first or second season's growth, the exposed surface gradually becomes less succulent, and ultimately loses its vitality before it can be healed over. When this is the case, the wounds may be healed over, but no union can take place between the decaying surface and the enclosing sapwood; and this must unquestionably cause a blemish, if not a serious defect, in the quality of the timber. And, again, the healing of these wounds is an additional tax on the energies of the tree, which have already been considerably impaired by the removal of so many of the leaves. The system of foreshortening has many advantages over close pruning:—

1st. The growing energies of the tree are not weakened to any great extent. When foreshortening is judiciously performed, there is so little of the branch removed that the loss is scarcely ever felt by the tree.—2nd. It prevents a waste of energy, and keeps the branches from diverting too much of the nutritive food from the stem. When a judicious method of foreshortening is carried on with due caution and discrimination, and in a timely and progressive manner, it prevents rival leaders and strong side branches from increasing their own strength, so as to detract from the growth of the stem; and it also keeps the tree to one leading shoot (or top), and that shoot in supremacy of all the others; and thus the main stem is enabled to appropriate the greatest proportion of the nutritive food for its own increase. Another aspect in which this system has considerable advantages over severe close pruning, is in the rearing of trees for the combined purposes of ornament and profit. The trees can be reared under this system with a natural and shapely, though not formal, appearance (unless it be desired). Close pruning clears the stem, but it makes the tree bare and unsightly, and does nothing to check the growth of the rival leaders, or to prevent the tree from being dismembered by heavy, ill-placed branches breaking off during a storm. In order to prove the suitability of foreshortening for this purpose as compared with close pruning, we may report the following as an example:—Some years ago a gentleman asked me to inspect the plantations on his estate, and report my opinion regarding them. I found that he was specially anxious about the condition of an ornamental plantation through which the principal drive to his mansion-house passed. This plantation was composed of Oaks, Elms, Limes, and Horse Chestnuts, with Firs for nurses—except at the sides of the drive, where, as the proprietor was anxious to form an avenue of Lime trees, the ground had been planted with these trees from 9 to 12 feet apart, without any nurses. These trees were about fourteen years planted, of a branchy habit and a vigorous growth; most of them had several contending tops. A year previous to my visit, the forester was instructed to prune these trees for the first time. This man understood no other method but close pruning. Accordingly, he started to clear the branches off the stem to nearly a half of its entire height. There were only a few trees pruned when the proprietor saw the bare and unsightly appearance that they had, and at once advised the forester to stop. In the month of May we sent a suitable man to prune the trees after the following method. Wherever there were two or more contending tops, he was to select the straightest and best as the leader, and shorten all the others by cutting off about a fourth part of their length, and slightly check the strong side branches, always paying the most particular attention to cut over neatly by a branchlet, that would have a tendency to hide the cut, and be inclined to take a horizontal rather than a vertical direction of growth. The pruning was not to be severely done, and no branches were cut off close by the stem. Two years after this they were again slightly pruned, and one or two of the branches on the lower part of the stem cut clean off, and the wounds made then were nearly healed over during the first season's growth. Ever since, the same method has been carried out with those trees that required to be pruned, and regular attention has been paid to keep the leading top of each tree in the ascendancy of all others, and to make sure that the vigour of the tree was not impaired. These trees have thriven vigorously, and have now a natural and stately appearance, while the few that were close pruned are only recovering from the severe check that they sustained, and thus they exhibit the advantages of foreshortening. Foreshortening has also peculiar advantages over close pruning in treating neglected hard-wood plantations. I have had several instances of success by treating them in the following manner:—By first selecting the trees most suitable for the permanent crop, they were slightly pruned, shortening any strong branch that was wide-spread or likely to take a vertical direction of growth, and reducing all rival leaders to about three-fourths of their length, in some instances just a mere point being cut off. In two or three years this treatment is again repeated, endeavouring to bring the tree a little into shape and to keep it to one leading top. If at all possible, I remove no branches close by the stem till the trees are fairly recovered from the effects of their neglect. In 1860 I had occasion to prune a few acres of Oaks twenty years planted, and the above was exactly the mode of treatment that I adopted. Some years previously, this plantation had been overthinned, consequently many of the Oaks were of a rather branchy habit. But the cautious method of foreshortening gave them a shapely appearance, without causing any visible check to their growth. It was very different with a part of this same plantation that had been close pruned the previous year. The trees that were thus operated on received such a severe check to their growth that they made little progress, and for some years had such a stunted, unsightly appearance, that it was thought most profitable to cut them down; the situation being a little exposed, there was small chance of their ever becoming

healthy good-looking trees. The original object of the proprietor in planting was chiefly ornament and shelter. The Acorns from which these trees were raised he had gathered with his own hands in another country, and all along he had been interested in their progress; but in the case of those that were close pruned, his object was utterly frustrated. Another example, almost parallel to the above, came under my observation four years afterwards. In this case, the close pruning had been performed under the supervision of two foresters. The plantation consisted chiefly of Oaks twenty years planted, and the most thriving part had been operated on by No. 1 forester in the most barbarous manner. The branches had been chopped off with a light axe, and the bark on the stem had been much slashed by the axe after it had passed through the branch. In fact, a more ruthless case of close pruning never came under our observation—what with a little caution might have been fine Oaks, were actually left with only three side branches, and some but two. This severe treatment had been performed three years previous to the time when I saw them, and they had not during that time made much progress, except the growth of some dwarfish spray on the bare stems. No. 2 forester came, and two years afterwards pruned another portion of this same plantation. His system was a little more refined when clearing the stem. Any very strong upright-growing branch that came in his way he did not cut off, but cleared off the branchlets from it to the same height as he did on the main stem, namely, about three-fourths of the stem bared. It is almost needless to say that this method also reduced the vital energies of the tree, and checked its rate of growth to a great extent. These trees, after being left for seven and five years respectively, and making but little progress, were cut down, and the bark peeled and cured; but we found many of the trees so deficient in circulating sap, that it was impossible to get the bark profitably taken off. Altogether it was bad quality of bark; the exterior was rough, and, though carefully dried, the inner bark contained but little astringent matter. A year after the second portion of this plantation was pruned, a number of Oaks grown under similar conditions, and about the same age (in fact, growing about 500 yards' distance from these), were foreshortened, and a few branches were cautiously from time to time removed from the stem; and these Oaks are now worthy of being termed naturally handsome and thriving trees. There is yet another instance in which the two methods can be contrasted, namely, in the rearing of trees in a nursery for the purpose of planting them out as hedge-rows or in the park. By foreshortening, we get a stout well-proportioned stem, able to overcome the effects of transplanting and withstand the influence of the wind; while, by the other, we get a slender weakly stem that makes but little progress for a few years after being planted out. For example, some years since, when planting a row of Lime trees on the side of a drive, I found myself short of a sufficient number of home-reared trees, and wrote to a very respectable nurseryman to supply me. He replied, stating that the trees he had of that size were bought in, and were barer in the stem than he would have liked, but he could get no other. As soon as they came, I at once saw that they had been very much overpruned. There were several wounds on their slender stems, scarcely healed over. Seeing this, I planted them very carefully, causing a portion of leaf-mould to be mixed with the soil from each pit. Notwithstanding, the home-reared trees that had been foreshortened made more progress the first season than the others did in four, and the latter still have a very bare appearance.

Nature's Pruning compared with Foreshortening.

I come now to compare the advantages of nature's pruning with foreshortening. Some years since a number of articles appeared in the *Scottish Farmer*, that were apparently written by a theorist. He denounced pruning totally and vehemently, as unfit to be practised. But, notwithstanding all that was then written, it can be easily shown that the actual evils of pruning have originated from the abuse of the practice, and the mistaken use of it, as in the case of excessive close pruning. But, beyond the overdoing or the undue repetition of foreshortening, all other disadvantages are entirely imaginary. No really bad effects whatever can be fairly chargeable against judicious foreshortening, when conducted on sound principles, except it be the incidental ones of its affording those who are uninitiated in the first principles, or unpractised in the art of foreshortening, a temptation of overdoing, and thereby maltreating, trees. It is, we think, the enormous mischiefs that have attended and followed the practice of severe close pruning that have led some writers to speak currently against the practice of any pruning whatever. But the bad effects must be charged against a faulty method, and not against every system of pruning. There are several disadvantages that follow the entire absence of pruning, and some think that, in the case of rearing hard-wood trees with nurses, these disadvantages can be obviated by proper attention to thinning. But, in

our opinion, it is impracticable to rear a crop of hard-wood trees as judiciously and profitably by merely thinning, as when attention is paid to check rival leaders and strong side branches. Delaying the removal of any one of the nurses may cause the decay of a number of the side branches, but it cannot arrest the progress of a contending leader; on the contrary, it tends to encourage it. When thinning is unduly delayed, the nurses have a tendency to force the side branches to grow upwards; and thus ill-placed limbs and double tops are formed. And it also makes a bare, slender stem, by causing the branches to decay and fall off, generally leaving a piece of decayed stump on the trunk of the tree. Nature at once of herself endeavours to remove these, and unaided she will effect it, but not certainly without causing a greater defect in the timber than sawing off the stumps would do. Nature carries on the amputation and healing-over process at the same time; and the new collapsing sapwood, in endeavouring to accomplish this, encloses a portion of the decayed branch. Thus a protuberance is produced, and the piece of decayed branch that is enclosed will, beyond all question, cause a flaw in the timber. Recently the following example came under my notice:—Two plantations, consisting chiefly of Ash and Elm, were thinned at one time. Though on different estates, these plantations were adjacent to each other, and the age, soil, and situation of both were alike; but the method of rearing had been very different. No. 1 had been occasionally pruned and regularly thinned, and the "root-cuts" of the trees that were taken from it at this time sold readily at 1s. 6d. per foot in the plantation. No. 2 plantation had been utterly neglected in pruning, and the thinning had not been performed in time, and the root-cuts of the trees sold with difficulty, after being carted to the road, at 1s. 1d. per foot. "The tops" or second quality of timber in both plantations were sold to the same wood merchant at 12s. per ton delivered. He cut them into barrel staves, and kept the produce of each plantation separate. At the time of sawing, No. 1 plantation produced more staves per ton of rough timber than No. 2 did. After the staves were dried, they were sold, and about one-fourth of those cut from No. 2 were rejected, and disposed of at less money, owing, as the wood merchant said, to the "black knots falling out of them;" and that these were pieces of decayed branches that had been enclosed during the growth of the tree there can be no doubt. We went and compared the staves together, and found that there was scarce a flaw in those cut from No. 1 plantation, while many of the others were much discoloured, and in some of them there were holes about a half-inch in diameter, from which the pieces of decayed branches had fallen. An examination of the trees showed the same results; many of the trees in No. 2 were partially covered with tumours, and the timber of many had a blackish appearance to the very root. And there can be no doubt that this was caused by the admission of water through the cavities that had been formed by the fall of decayed branches. In this instance, the attempt to produce a clean but sound bole of timber, by delaying thinning until, from confinement, the branches had decayed and fallen from the stem, and so rendered pruning unnecessary, proved abortive. The method of treatment followed in rearing these plantations was very different, and so was the quality of timber produced. The best timber, and, therefore, the most profitable crop, was produced by No. 1, which had been reared under a moderate system of pruning, when in its most rapid state of growth. These examples prove the inadequacy of nature's pruning to produce a sound bole of timber; and they also, I think, show that timely foreshortening would frequently prevent the decay of branches, and thus avert the formation of cavities in the stems of the trees. It is well known that severe thinning produces a coarse, branchy stem; for, unless they be pruned, there is nothing to prevent the branches from having their own way without restraint, and they thus absorb too much of the nourishment from the stem. These branches are frequently improperly attached to the trunk; and being heavy, they often splinter off, and thereby destroy the ornamental appearance of the tree, and deteriorate the value of its timber. Trees brought up under these conditions are generally short in the stem, with large wide-spread heads, that occupy more space than if they were reared under a proper system of pruning and thinning. Judicious foreshortening enables the trees to economise space and the benefits of the atmosphere: timely checking of rival shoots and strong side branches restrains the natural bent of the tree, and thus they are kept within due bounds, without being subjected to an over-reduction of the vital functions. Each individual tree is enabled to participate in the advantages that are to be derived from equal exposure to the influences of solar light and heat. Brought up under these conditions, there is a sufficiency of light admitted equally all round each tree; consequently they will grow faster, and for a much greater length of time, without unduly pressing on each other, than if left without any pruning whatever. Four

years since an ornamental plantation, composed chiefly of Lime trees, Horse Chestnut, Sycamores, and Maples, planted about 9 feet apart, came under our observation. They had been ten years planted and as it was the intention of the party who was intrusted with the rearing of these trees to produce an ornamental tree without any pruning whatever, not a branch had been touched. Consequently most of the trees had several contending tops, and the whole of them were of a wide-spread and very branchy habit; so much so, that many of them were pressing on each other. These trees were cautiously foreshortened in 1869, and in the springs of 1870 and 1871 they received a slight pruning, just sufficient to keep them to one leading top, and restrain the strongest of the side branches, so that they might be very gradually brought into a shapely but natural and ornamental appearance. This has now been to a great extent accomplished, and the trees all the time kept in a rapid growing state; and, if they are judiciously cared for, it will be some years before any thinning whatever is required. And we are much deceived if they do not ultimately become very stately and ornamental trees. Believing that the idea of rearing these trees, whether for ornament or profit, without any pruning whatever, was utterly absurd, and wishing to prove it, I left a few unpruned, and, as yet, they have made little progress in the way of becoming anything like trees; in fact, we anticipate that they will become nothing more than huge bushes, unsightly in appearance, and unprofitable as a crop. I might give more examples illustrative of the defectiveness of nature's pruning as compared with foreshortening; but I forbear, believing that I have said sufficient to prove the advantages of fore-shortening, and to show that, when this system of pruning is adopted in preference to nature's, those evils that alike follow over-crowding and over-thinning are averted.

Snag-Pruning.

I have yet to consider the method of "snag-pruning"—i.e., cutting over the branch from a few inches to about a foot from the stem. The effects of this method on the energies of the tree are similar to those that follow close pruning; the rate of growth is diminished, and nothing done to prevent the growth of rival tops. The leaving of this stump is no advantage whatever; it becomes an incumbrance to the tree similar to what a decayed branch would be, and its effects on the quality of the timber are identical with those we have already described as following nature's pruning. Consequently, we consider it sufficient to say that it has no real advantages—it lacks the good effects of foreshortening, and has all the bad effects of the method of close pruning, as also those of nature's pruning. Another advantage of foreshortening is, that it can be applied to Coniferae, in the form of pinching or disbudding. This very often secures a suitable leading top for those trees that have lost their leader by accident or otherwise. I can point to several examples where, by a little attention, good leading shoots have been produced by pinching back the upper tier of lateral branches except one. When this is done, nature comes to our aid, and gradually as the branch grows, she turns it in an upward direction, until it becomes vertical. This is often done with such nicety, that in a year or two the tree has scarcely any appearance of having ever lost its leader. In 1870, a *Pinus Laricio* lost its leading top after it had grown a few inches. I cut this broken top out by the joint, and pinched all

the lateral branches on the uppermost tier, except one, which was left as a top, and it grew about 6 inches that season, and in 1871, 24 inches, and gradually came into the place of the leader. This season it has again added 24 inches to its height. I could give similar examples, with specimens of *Picea nobilis*, *Abies Douglasii*, *Pinus excelsa*, and many others that have been brought into a proper form of growth by timely pinching. In pruning deciduous trees, when we are forced to take a suitable lateral as the leader, nature lends us her aid, and by degrees assists it into the proper form and place. And again, when we shorten a rival top, she comes to our assistance by causing the lateral branches that grow out above the shortened branch (or top) to bend down, and grow in a rather more horizontal direction, and thus, as it were, assist us by overtopping the shortened leader. Before concluding this paper, I wish to say that foreshortening can be overdone, and I want it to be distinctly understood that I am no advocate for the system of shortening the most of the horizontal branches, and thus, as it were, cropping the head of the

tree into a formal or conical shape to please the eye. This ought to be considered a matter of secondary importance, for, when it is severely carried out, it is little better than close pruning. I have seen several instances where it was so much overdone, that the energies of the trees were very much checked. When the branches are too much curtailed at one operation, foreshortening becomes positively detrimental to the health and growth of the tree at any age. The great art of foreshortening is to shorten only contending leaders, and those side-branches that are so strong as to detract from the growth of the stem, to about one-fourth or one-half of their length. In this manner, pruning only those trees that require to be pruned, we go over the plantations every second or third year till the trees have reached to about 30 feet high. When such a system of management is adopted, little close pruning is required, as the nutritive energies are directed more to the extension and formation of the main stem than to the growth of the lower side-branches. This appropriation of the greatest proportion of nutriment by the main stem has a tendency to keep the side branches slender; and gradually as the tree increases in height, this, combined with the influence of the nurses, causes these branches

to become less vigorous. When close pruning is necessary, it should be done sparingly, taking care not to remove too many branches at one time; and, before removing any, pay particular attention to the appearance of the tree, to see that it is so abundantly supplied with healthy leaves as to be able to spare one or two of the side-branches without its rate of growth being very much checked. And endeavour to make sure that the wounds made on the stem by the removal of these branches is not greater than the tree can heal the first, or at longest the second, season. It is during the growing season that pruning can be best performed, as the wounds are begun to be healed up before winter sets in. But, if the operation is delayed until late in autumn, when growth has ceased, there is great danger that the wounds will never heal properly. Having given the above outline of the methods of pruning, I would only add that foreshortening is beyond all question the most advantageous method to adopt wherever pruning is required. And I would recommend every one to test it for himself by actual experiment, and thus establish a uniform method of pruning based on sound and definite principles.



The green lunc in the grounds of Holland House (see p. 484).

THE KITCHEN GARDEN.

THE KITCHEN GARDEN SUPPLY.

By J. GROOM, Henham Gardens.

ONE of the gardener's many duties, and, I may add, one of the most important, but least appreciated, is the supplying a constant succession of fresh vegetables, fit for the table, at all seasons of the year. No matter whether the gardens are large or small, noted for their quantity of glass or forced fruits and flowers, or conspicuous by their absence, wherever a gardener is employed in a nobleman's or gentleman's establishment, a supply of vegetables, in proportion to the demand, is sure to be required; and many a young gardener, who has become proficient in every other branch of his business, finds to his cost, on taking charge of a place, that he is sadly at a loss to keep up a constant succession of many of the most useful vegetables, especially those that only remain in a fit condition for table a short period, as, for instance, Peas, French Beans, Cauliflowers, &c. In fact, many a gardener has to commence the study of this useful subject through the failures that are sure to overtake those who undertake what they are not conversant with. It has often surprised me that so important a branch of the gardener's duties is left for him to pick up by chance, as, unless the young gardener in his earliest days has a natural inclination to study this branch in his own time, he is generally rather deterred than encouraged by his seniors from commencing it. We will take, for example, a young lad fresh from school, who is just about being apprenticed at some garden of note. In the majority of cases, his parents will stipulate that he shall be employed solely in the "houses," which gives the young aspirant at the very outset the erroneous idea that the kitchen garden is only fit for some of the nearly worn-out labourers of the place. This idea is strengthened by the great majority of visitors who annually visit all gardens of any pretensions, and who, if they go into the kitchen garden at all, affect to see nothing worthy of their attention. The few remarks that I intend to make on this subject are not written with the idea that gardeners will bestow any undue attention on this branch of their duties to the exclusion of others, but to call the attention, especially of young beginners, to the fact that, although visitors and employers may admire the gorgeous beauty of geometrical flower gardens, or the fine show of plants in the conservatory, or rows of noble Pine-apples, and houses of Grapes and Peaches, yet there is ample room for him (in a much neglected branch of his profession) to gain an equal share of renown for more necessary and useful, if less ornamental, productions, by having at all times the greatest variety of vegetables and salads that can, by any possibility, be called "in season."

Having briefly touched on some of the reasons why kitchen gardening is not so popular as other branches of the gardener's art, I will at once proceed to state a few of the causes that, I think, have tended to bring this state of things about. In the first place, I presume that everyone is ready to admit that within the last twenty years gardening, taken as a whole, has made extraordinary progress; in fact, is keeping pace with the times in which we live. But I cannot help thinking that the kitchen gardens of twenty-one years ago were quite equal to those of the present day. In fact, in the majority of places that have come under my observation, I should decidedly say that some of the progress in fruit and flower culture has been at the expense of the kitchen garden crop. I would simply ask in how many noble old-fashioned gardens, attached to the ancestral halls of England, are the choice south borders, where the earliest crops used to be obtained, now covered with pits for flowers or houses for fruit? While the north borders, those equally useful positions in midsummer for salads, Cauliflowers, &c., are now generally filled with spring-flowering plants; even the alleys of Asparagus beds being seized for the same purpose, as it is generally remarked that they do not do much harm, and must be accommodated somewhere; but, like cropping Vine borders, if ever so lightly, what the crop takes from the border is certainly so much loss to the Vines. In this way the ordinary vegetables are either cramped for space, or, being displaced from their once suitable positions, are often crowded into any spare piece of ground outside the sheltering garden walls, or drag out a

miserable existence in the orchard, where, with so many adverse circumstances to contend with, it is no wonder if they do not present a very inviting appearance or give the young gardener, whose lot is cast amongst them, any idea of the pleasure and interest that may be found in their cultivation, when each and all of the choice vegetables, herbs, and salads we possess are seen luxuriating in positions suited to their several wants, not arranged by an old-fashioned routine, or sown on some particular "Saint's Day," but when a systematic arrangement has found a suitable place for everything, and has given a charm even to the kitchen garden. While making every allowance for the great increase of the gardener's duties by the introduction of such numberless varieties of plants, bedding-out in all its phases, the great demand for drawing-room and dinner-table decorations, all of which claim a share of his time and attention, yet he will (if he is a gardener by nature as well as by occupation) find time to see that even this, the humblest branch of his calling, does not suffer for want of forethought and constant supervision—both indispensable elements to ensure success.

There is nothing easier than to find fault, but if we do not profit by the failures as well as the successes of others, where should our knowledge come from? Let us take, as it were, a bird's-eye view of two different gardens, and observe what are the leading features of the one that is keeping pace with the times and that whose position is stationary, or in a backward direction. Let us first take one whose condition may be likened to that of the man in the parable, "Whose last state is worse than the first." Here we are sure to find any quantity of old scraggy standard fruit-trees, standing or leaning in every direction, whose annual produce does not pay for the gathering, much less the space they occupy; while Strawberry beds and fruit bushes of all descriptions are generally scattered all over the garden, as if self-sown, so that to protect them from birds, or form a correct estimate of the stock in hand, is out of the question. Here will, most certainly, be found every noxious insect and disease that vegetable life is heir too; for, the soil not being properly cultivated, a fortnight's drought brings everything to a standstill, except the grub, the caterpillar, and mildew, which are ever ready to complete the work of destruction. Well may anyone, whether a gardener or amateur, feel little interest in a garden conducted on these principles. But, let us change the scene to a garden where reason and common sense make even the simplest forms of vegetation attractive to the beholder. Here we shall see broad straight walks, clean and level, and neatly edged with Box or tiles; and dwarf espalier or cordon fruit-trees as a division between borders and quarters, while a systematic arrangement is visible on every side. The standard trees will be grouped together or accommodated in the orchard; all Gooseberries, Currants, and Raspberries will have quarters especially allotted to them; also the Strawberry, Asparagus, and herb beds, and all crops of a permanent character, thus leaving the principal quarter clear for successive cropping. The soil being deeply cultivated and manured, according to the crop, the effects of drought will be scarcely visible, at least for a long period, and while caterpillars and mildew are destroying garden No. 1, No. 2 will be flourishing like a green Bay-tree. The systematic arrangement being once begun, will be followed even to the minutest details, and successive crops will be seen following each other as regularly as the days of the year. No weeds will be here to run to seed, nor crops either, but every stalk will be removed to the rubbish-heap, as soon as done with, and the ground prepared for another crop. The seed-room will be looked over every alternate week, and small sowings made of everything required. Above all things, do not let routine or old garden calendars cramp your energies in this matter, for no calendar that ever was written can meet the requirements of all. Let your calendar be an estimate for the wants of the establishment to be supplied, and, with practice, a failure in the supply will be observed long before it comes, and means taken to provide substitutes. When the supply is properly kept up, depend upon it, the things have not come by chance, as Grapes may be had the whole year round with less attention than some of our ordinary vegetables.

There is already such an abundance of excellent treatises on every branch of kitchen-gardening, that it is certainly not

from any lack of them that more improvement is not observable in the general practice. My own impression is, that if vegetable culture received as much encouragement at our shows as fruits and flowers do, an equal advance would soon be observable, but, with a few notable exceptions, vegetables exhibited by professional gardeners are a complete failure, as, the prizes being generally quite insufficient to call forth a spirited competition, the products are, as a rule, only second class, and are consigned to the most out-of-the-way corner of the show, as if they were a disgrace to all concerned in the undertaking. This not only makes their cultivation coldly looked down on, but prevents the rising generation of gardeners from giving their attention to it, since all the honours and awards go to the foliage and flowering plants, fruits and Roses, while the vegetables, which become more and more every day an essential necessary of our existence, are placed twenty degrees lower on the list than a collection of *Coleus* or some such easily-grown plant, requiring neither skill or practical knowledge to bring it to all the perfection it will ever attain. Not that the exhibiting fine specimens on any given day would be any guarantee that a regular succession was maintained at home, but it would raise this branch of gardening in the estimation of young beginners, so that they might feel some interest in taking notes both of success and failures, and be prepared in this useful branch to give a good account of their stewardship.

Let us now suppose that it is the commencement of the year, and the soil is thoroughly cultivated, and general work well up with the season. The first thing must be to procure a supply of seeds, and mind and get them from a firm that does not pretend to supply cheap things, as cheap seeds are worse than useless, for, if you cannot depend on their being true to name and good in quality, how is it possible to know how thick to sow them, or at what season they will be fit for use? And do not have too many varieties, especially of those with too highly-coloured descriptions, but place your trust only in sorts of well-established excellence, at least until you have proved new sorts to be superior to your old favourites. I find that successive sowings give us a much more continuous supply than a great variety of sorts; for instance, I only grow one sort of French Bean, Sir J. Paxton, yet we gather every week, and nearly every day, in the year, and the same may be said of most other vegetables. Let their season be prolonged both by forcing and retarding, to the greatest length possible, as a constant change is always welcome in the kitchen. In conclusion, lest any of your readers may be sceptical as to the importance of this apparently simple subject, let me for a moment call their attention to the fact that the choice vegetables and salads we are now able to enjoy so freely are not really natural productions, but have been brought to their present state of excellence by the unwearied toil and attention of past generations of gardeners.

HOLLY, IVY, AND MISTLETOE IN THE LONDON MARKETS.

TOWARDS Christmas, Covent Garden and other markets of the metropolis, are glutted with Christmas evergreens for the decoration of the three-million-peopled city. "The boughs with clustered berries bright," and the Laurel, Ivy, and Box, which can be had for the asking in rural and less populous places, suddenly become in London important articles of commerce, and the poorest households are willing to pay in coin for a spray of Holly and Mistletoe to welcome Christmas. Dark as it is on a December morning, long before daybreak, Covent Garden and the adjacent streets and approaches to the market are thronged with heavy waggons, some from the railways and some from the country turnpike roads, and all laden with Mistletoe, Laurel, Ivy, Box, and Spruce Firs for Christmas trees. Here are waggons, piled up with the festive evergreens. Many laden with at least a ton. The procession is at a standstill, for the market is already full. Every market morning for more than a fortnight, this is the aspect of Covent Garden. And Covent Garden is only one of the great markets at which Christmas evergreens are received, in order that they may be retailed in all the squares, streets, lanes, and alleys of London. Where does this vast supply come from? These waggons of Mistletoe are not from the turnpike roads, but from the railway stations—from the South-Western and Great Western termini. English Mistletoe for the London market comes almost

exclusively from the cider and perry counties—from the Apple and Pear orchards of Worcestershire, Herefordshire, and Gloucestershire. The Apple, and not the Oak, is the tree which yields the Mistletoe in abundance. In the western and south-western counties of England, where a moist climate and a warm summer produce the juicy fruit for making cider, not unfrequently fifty per cent. of the Apple-trees are infested with the Mistletoe. So important a commodity has the Mistletoe become, that the quantity despatched from Hereford alone every December has been estimated by Dr. Bull to exceed one hundred tons. From Worcester even a greater quantity is supplied. The London supply is despatched from Gloucester, whilst the northern towns receive their proportion from Hereford and Worcester. The orchards of Normandy and Brittany, too, supply large quantities of Mistletoe to the London markets at Christmas time. Large tracts of country in western France, as in western England, are devoted to Apple-growing. In Normandy alone, the tree which the Mistletoe most delights in has been so widely cultivated, that as many as five hundred varieties of the acid or bitter Apple are known in the district. This French Mistletoe finds its way to St. Malo, and is thence shipped to England by steamer. From the Channel Islands, too, Mistletoe is shipped for England, although orchard culture in Guernsey and Jersey has of late years been decreasing. Arrived at Covent Garden or its precincts, the Mistletoe is offered for sale in bulk or in small lots. Even in the off-streets, too, where the cargo can get no farther on its way to the head-quarters of the market, the sales begin and are often completed on the spot. The waggon is converted into a shop, and the sales are legally effected, for they take place within the market precincts, and the dues are collected as though the transactions had occurred in the piazzas of the market itself. As we stand here, Mistletoe is selling all around us from 1s. 6d. a branch to £5 and £6 a ton. But, great as are the quantities of Mistletoe which find their way to the London markets at Christmas time, the various kinds of Holly are still more plentifully supplied. Holly, however, is not so peculiarly the growth of certain districts as Mistletoe, and the sources of its supply are more various, and perhaps at the same time more questionable as regards the law of *meum* and *tuum*. All around London the festive season is one of uneasiness and trepidation to the owners of evergreen gardens and shrubberies, and not seldom it is regularly signalised in such cases by the employment of watchmen, night and day, to protect the grounds against marauders. A considerable quantity of the Holly which finds its way to the London markets is come by in a casual but not necessarily dishonest manner. Here, for instance, are several loads which have been brought in railway vans from the Bricklayers' Arms station. We learn that some railway works in progress in Surrey are being carried through a thick jungle of wild Holly and underwood. The Holly becomes the perquisite of the ganger and his men, and is found to be well worth transport to Covent Garden Market. Many other consignments have a history which tells of the exceptional character of the trade. Much of the evergreen supply for Christmas purposes is offered by itinerants, who may or may not have contracted for the goods they possess, and it is hardly doubted in Covent Garden, Spitalfields, the Borough, and Farringdon Street, that many a load of Holly, which looks as honest as its neighbours, has been obtained surreptitiously. But the great Holly supply of the London markets comes in in the form of consignments to order from well-known business clients in the country. Stewards of great estates are wont to sanction the clipping of the plantations at Christmas time, and some valuable patronage of this kind is freely exercised. Gardeners at gentlemen's seats, too, are allowed to lop the evergreens and to treat the spoil as their perquisites, or they sub-let the privilege to the local market-gardener, who well knows where to find a customer for his wares. Nor must it be forgotten that the Holly still maintains its aboriginal hold on the common lands of Surrey, Hampshire, and other countries near enough to London to repay the expense of carriage and yield a profit to the vendor, besides putting an honest penny in the way of the villager far away. Some of our finest native Hollies are found in the New Forest, but Sevenoaks and Cobham and Holmwood are equally well known to the purveyors of Christmas evergreens. We find, too, that it even pays to bring Holly from Shropshire, and that large quantities are being brought from the environs of Shrewsbury year by year. At Covent Garden it is sold to the retailers in bundles from sixpence upwards, whilst the same quantity of variegated Holly often fetches from five to six shillings and upwards. A load of well-berried variegated Holly sometimes fetches as much as £20. So at Covent Garden, before daylight on a December morning, the trade goes on in glistening broad-leaved Laurel; Ivy, glossy and black-berried; Holly, "with its thorny leaves and berries like crimson drops," as the symbolical writers love to describe it; and round toppling bushes of the white-berried Mistletoe.—*Leisure Hour*.

GARDEN DESTROYERS.

INSECT PESTS AND HOW TO DESTROY THEM.

ONE of the great and continuous difficulties with which the gardener has to contend is the ravages of insects. If one half the failures experienced in the general routine of cultivation are attributable to our fickle climate, I think an equal number of our disappointments may be set down to the ravages of the numerous insects that infest, indiscriminately, most cultivated plants. Their attacks are incessant, and, unless means for their destruction are applied without intermission, they get the upper hand to an extent that renders futile the best attention to plant cultivation in other respects. We frequently meet with people who say that some of the worst insect pests, whenever thoroughly established, cannot be extirpated. Such I have not found to be the case; yet their thorough destruction requires patience and perseverance, with some observation of their different natures and habits; others, again, even if destroyed as soon as they make their appearance, are succeeded by fresh broods that come into existence, and which require incessant watching to prevent their ravages. One of the greatest difficulties to contend with is that there is no means by which any one species of insect can be destroyed upon all the different species of plants upon which the insect will live. This arises from the fact of some plants not being able to bear the application necessary for the destruction of the particular insect with which they are affected; where such is the case I shall endeavour to point it out in a way that may, at all events, save disappointment.

Ants.

The first subject on which I propose to treat is that small industrious creature the ant. It is not nearly so troublesome or injurious to vegetable life as some others, yet, when it exists in great numbers in plant houses, especially amongst stove-plants or Orchids, it does much mischief in different ways. There are several species that infest glass structures, all natives of warmer countries than our own. Their principal food in houses devoted to the cultivation of fruit-bearing or flowering plants consists of the excrement of other insects, such as that of aphides, brown scale, and mealy bug, and they exhibit marvellous instinct in providing for their future food by carrying, with the greatest possible care, these insects from one plant to another. I have watched attentively for hours, and have noted the particular branch on which they have deposited their living freight, which, in a short time, has become a numerous colony of the so-transported insects in active life. The assistance which they give in this way to some of the worst insects that infest plants, renders them anything but desirable occupants to our plant houses. There is one species, small, but wonderfully agile, that is very objectionable in Orchid houses (especially amongst *Aërides*, *Saccobium*, and *Vandas*), where it is continually carrying the soil in which the plants are potted up into the axils of the leaves. In one night these little ants will frequently carry up in this way as much soil as would half cover the palm of the hand, making the plant on which they are operating look very unsightly, as well as doing serious harm. Their working is

very injurious when they make their nests in the balls of hard-wooded plants, the main road to which is generally down the sides of the pot, frequently removing the soil down to the drainage; this allows the water, when applied, to escape by the side of the ball instead of percolating regularly through the soil, the result being that the soil becomes dry underneath, producing death or an unhealthy condition of the plant. I have known them attack a collection of Heaths in this way, doing irremediable mischief in a very short time. It is often necessary to resort to several means for their destruction, as they generally find out anything that does not agree with them before it has much diminished their numbers. Sometimes a means may be taken to destroy them, which will answer effectually; and when found necessary to try the same a second time, through some cause or other they cannot be allured by it. From this I have no doubt has arisen the number of remedies recommended for their destruction. I have caught half a pint of them in forty-eight hours, in four half-pint earthenware jam pots, placed in their runs; in each of the pots were put two inches of the best salad oil; and on another occasion they have altogether refused to go near it. I never have got quite clear of them. They breed fast, consequently I am obliged every year to make an onslaught upon

them, using several means simultaneously. First, I procure several pieces of sponge, clean and quite dry, into which I dredge as much fine grated sugar as the sponge will hold. The sugar allures them by hundreds, when sponge and all are thrown into boiling water. Then dry the sponges, re-fill them with sugar, lay them down again in their runs, and scald again when fresh lots of insects have been allured to them. Along with the above, get raw beef and mutton bones, with a little flesh or gristle on them. These will quickly become covered with ants, when all can be dipped in the boiling water. Also get a flask of the best olive oil, and divide it into four or five of the jam pots already described. These may

remain in their runs several days, or until the oil becomes foul with the dead insects, after which they will cease to touch it; replace it with fresh oil, and return the pots to their runs. Roth & Ringisen's beetle-poison (which can be procured from any druggist), is also very destructive to them; place small bits of the poison, about the size of a nut, on oyster shells or bits of glass. These must be put out of the reach of cats or dogs, or they will be poisoned by them. By using the above means all at the same time for about a fortnight in winter, I manage to keep ants down so that they do no harm. The pots that hold the oil and the sponges must be quite clean or they will not come near them. Rags dipped in turpentine, placed in their runs, are recommended, but I never found them to be of any use in a plant or fruit-house, in which the ants simply make a fresh run.

T. BAINES.

LEAF-MINERS.

EVERYBODY must have noticed in their autumn rambles the pretty white lines and tracings so conspicuous on the upper surface of our Primrose leaves in the green lanes of old England. They tell us of the long summer life of the larvæ of a fly (*Phytomyza nigra*). Its economy is this: The egg is laid by the parent insect in close proximity



Italian Garden at Holland House (see p. 493).

mity to one of the veins of the leaf, and the young larva, on emerging, buries itself under the epidermis, tunnelling and enlarging its tunnel in proportion to its growth. As soon as it is full-fed, it makes up on the under-surface of the leaf, appearing in the autumn as a tiny black fly with pale poisers. It is a close ally of the fly that blotches the leaves of our Holly, and its economy is similar. Though so imbedded in the tomentum of the leaf, it does not escape the attacks of a prowling ichneumon, which usually makes it serve as prey for its offspring. I have hatched the parasite this autumn abundantly, but only obtained a few specimens of the miner itself, though I collected a considerable quantity of the affected leaves.—PETER INCHBALD, *Hovingham Lodge, near York*. [We are much gratified to find Mr. Inchbald taking up the life-history of the leaf-mining Diptera. The obscure genus *Phytomyza*, of Fallen, contains a great number of minute flies, all of them, so far as known, feeding on the parenchyma of leaves, and allowing the upper and under cuticles to remain untouched, thus producing a track sometimes sinuous, at others a mere blotch on the leaves—a process in either instance greatly disfiguring the plant. The species infesting the leaves of the Holly is *Phytomyza Aquifolii*, of Desvoid, who has described it in the "Revue et Magasin de Zoologie," for 1851. On the wrapper of the "Entomologist's Annual" for 1865 Mr. Stainton has represented a Holly leaf disfigured by the insect, but we see no reference to the name. The insect mentioned by our correspondent is *Phytomyza Primulæ*, and its tracks may be observed, as he says, very commonly in Primrose-leaves. A great number of other species have been described on the Continent, and a few in Britain. We give an alphabetical list of those best known: *Aquifolii*, feeds in the leaves of Holly; *Aquilegiæ*, in Columbine; *exigua*, food not ascertained; *flavocula*, ditto; *geniculata*, in Wallflower and many other plants; *Lappæ*, in Burdock; *lateralis*, in the great Moon Daisy; *Lonicæræ*, in common Honeysuckle and Woodbine; *nigripes*, food not ascertained; *Onopordiinis*, in Scotch Thistle; *ornata*, in Whitethorn; *Plantaginis*, in the narrow-leaved Plantain; *Primulæ*, in Primrose; *pusilla*, food not ascertained; *Ranunculi*, in Buttercup; *Scolopendrii*, in Hart's-tongue Fern; *Sphondylii*, in Cow Parsnip; *Sonchi*, in Sowthistle; *Thapsi*, in Hoary Mullein; *Xylostei*, in Fly Honeysuckle. All of these, with the exception of *Onopordiinis*, are mentioned by Mr. Walker in the second volume of his "Insecta Britannica." *Onopordiinis* was found by that excellent observer, Mr. Henry Deane, of Clapham; he first noticed the mines in the leaves of the Scotch Thistle, which, like the Briar Rose and Shamrock (*Trifolium repens*), may be considered a national emblem. On holding the leaf up to the light Mr. Deane saw the little larva at its mining avocation; it soon emerged among the down on the under side of the leaf, amongst which it spun a snow-white cocoon of tiny dimensions. He supposed it to be the cocoon of a microlepidopteron; and, when the little black fly finally emerged, he was rather inclined to regard it as a parasite on the moth, than in its true character of miner of the leaf and architect of the cocoon.—Ed. Field.]

WORK FOR THE WEEK.

THE KITCHEN GARDEN.

THE season has now arrived when we may expect occasional obstructions to outdoor operations, so that there should be in store and in the mind's eye plenty of work under shelter, such as looking over old stakes, re-painting and tying them up into convenient bundles, and new ones should also be prepared by sharpening and tying them in bundles of a suitable length, for the various purposes required. Clean, point, and paint all old labels, and provide new ones of various sizes, having a well-planed face for writing on. Almost any kind of wood will do for common kitchen garden labels, but common Laurel is the best of all for writing on. Prepare plenty of straw-mats thatched frames, or hurdles, and have in readiness any available kind of protecting materials, so that no risk or hindrance may be experienced when frost sets in. Prepare also pegs, crooks, spurs, sticks, and stakes, litter, dry leaves, straw, haulm, and Fern; all of which will be found useful for protecting purposes. Dry dust is a most valuable protector for the crowns of plants of any kind, or for dredging Peas and Beans and other seeds when they first make their appearance above ground at this season. Dry wood-ashes should always be kept in store in old tubs, boxes, &c., for dredging Lettuce, Cauliflower, or anything else subject to canker or mildew, which many things are, during the short dark days of winter. Nothing is so effective as dry wood-ashes for preventing such evils—but they must be dry. They answer, too, as a fertiliser for mostly every kind of plant. Every bit of spare ground, and that which can at all be cleared from crops, should now be trenched, casting the soil up into rough ridges for frost to pulverise it. Take advantage of dry and frosty mornings for wheeling out manures and composts, and for turning the same where necessary. Look to drains, and to the

repairing and turning of walks, and, in short, anything in that way that can be done advantageously at this season of the year.

Artichokes.—If Globe Artichokes are not already protected about their crowns with litter, Fern, or dry leaves, see to the matter without further delay. Also mulch Jerusalem Artichokes, for they are much better taken up as wanted for use, than when taken up all at once and stored; and, if mulched, they can be procured daily without trouble, however hard the frost may be. Should the haulms be placed over the mulching, they will prevent the latter from being displaced by wind.

Asparagus.—Take well-prepared strong roots of this and place them in a dung or leaf frame with a bottom heat of from 60° to 70°, and with a few inches of soil underneath the roots. Cover them slightly the first week, but afterwards put three or four inches of healthy light soil, decayed tan, leaf-mould, or sea-sand over them, watering with tepid water to settle all down amongst them. When the shoots appear, admit light and air on favourable occasions, for if the "Grass" is kept always in the dark, it will become blanched, and the flavour inferior. Covering the sashes with litter or mats is, however, necessary to expel frost. Apply fresh linings to the frames in the case of a declining temperature, and always cut the shoots before they become overgrown. Where sea-weed and sea-sand are at command, dress out-door Asparagus beds with them; but where these cannot be had, cover with good manure incorporated with salt.

Beans.—A sowing of the Early Mazagan and other early Beans may now be made in rows about two feet apart on warm banks or borders. Some seed may also be put into a box or inside a cold frame, intermediate house, or warm corner, for transplanting in open weather in January or February; this plan not only ensures short-jointed prolificness, but the Beans are also out of the reach of mice.

Cabbage or Coleworts.—If intended for winter consumption, they should all be collected into close-sheltered quarters, and laid in thickly, in order that they may be protected if necessary. Under such conditions they can also be easily found after a heavy snow or in frosty weather, and the ground may be cleared, manured, and trenched, and held in readiness for spring cropping.

Cardoons.—Finish binding up these, and protect them with dry litter or Fern, to keep them fresh and accessible in frosty weather.

Carrots.—Surround those sown in July and August on borders, intended to be drawn young for use through the winter, with a few short stakes and tree-prunings, or with any materials come-at-able, to give shelter. Sow the Early Horn and Dutch on a slight bottom-heat in frames or pits, close to the glass, on sweet, light, well-pulverised soil, and in rows a foot apart; and sow a row of Radishes between, consisting of Short Tops, Early Scarlet, or French Breakfast. Carrots in frames must be kept dry on the surface, and any Lettuces or Radishes grown amongst them and showing the least indication of damping should be removed at once.

Cauliflowers, Broccoli, &c.—If there are any stray late-autumn-planted ones about, collect them together, and lay them in frames, pits, or home-made turf-pits, to be covered with thatched frames, evergreen boughs, &c.; but see that they are not devoured by mice or rats, which are apt to nibble bits out of the very best white-hearted ones. Give air to young plants placed in winter quarters, and keep them clean and dry during these short days. Cauliflower plants placed under hand-lights, frames, or turf-pits for winter protection should be kept clean, and a dry and open surface maintained by frequently stirring the earth between them. Dredge with dry dust and wood-ashes on the least appearance of mildew, and also with hot air-slaked lime if canker should make its appearance. A light dressing will soon eradicate those two enemies, while neither will have a chance to appear if timely applications are made. It is through tardiness, neglect, and lack of timely observance that such enemies thrive. If there be any miscellaneous plants of Broccoli left about the borders of the late-summer-planted, or early-coming-in kinds, collect them all together, and shelter and protect them against severe weather. By planting them in double rows, hoops and mats may be used as a ready protection in the case of hard frost. Brussels Sprouts and Savoy, whose hearts are likely from age to burst, should be lifted with good balls and planted thickly in some cool place. By this means, too, the ground can be cleared for digging and manuring purposes.

Celery.—All that has made its full growth, earth up finally when the weather is dry; and, if the soil is heavy and stiff, and some light dry soil can be conveniently obtained, place it against the stalks with the hand. Have in readiness some protecting materials, such as litter, Fern, dry leaves, or evergreen boughs, in case of frost.

Chervil.—If this is not sown in boxes for winter use, take up some and place it in boxes to take into a frame, pit, or glass-house for use till spring.

Chicory.—Take up roots of this in succession, as required; pot

them in light soil, or plant them in the same, and keep them in the Mushroom-house, or other warm dark place, to blanch.

Curled and American Cress.—Protect a small piece of each of these for daily use; and sow common Cress and Mustard in succession, either in boxes or small beds of light soil, in a gentle heat, once a week or fortnight, as required.

Endive and Lettuce.—Such Endives as are in store for winter use, blanch as required; keep growing crops clean and healthy, by means of frequent surface-stirrings and dry dustings with wood-ashes. Tie up the earliest, or the most full-headed, in succession, which will leave room for the others between to more fully expand their hearts. Treat Lettuces taken in for winter use in the same way. Young late-sown Lettuce, now of course small and close to the glass, as they should be, must be well attended to in the way of giving air and dry dustings, or they will mildew and damp off.

Mushrooms.—Shed or house Mushroom-beds, now in full bearing, should be encouraged with a genial warmth from 55° to 60°, with a kindly humidity, produced by the fermenting materials for preparing the next succession bed, or tepid water charged with a little ammonia, keeping the surface of the beds from becoming dry and crusty in the same way, by gentle and genial applications of tepid water. As to Mushroom-beds out of doors, on the ridge system, such as are made to a large extent in the market-gardens round London, care should be taken when collecting the Mushrooms to be quick and methodical in replacing the litter the beds are protected with, and in covering immediately with mats, either Russian, Dutch, or home-made straw ones, or thatched hurdles, or light thatched frames made of light scantling stuff, and sufficiently wide to meet properly at the top of the ridges. All should be made secure against wind and wet, by tying them, or pegging, or placing heavy pieces of wood to prevent draughts or sudden checks.

Onions.—Dust with dry wood-ashes those for winter use and spring planting, on dry days, in order to keep them sound at the neck, and to prevent frost from heaving them out of the ground, and keep them clear from weeds and leaves. Old Onions should be kept dry and cold, and those in store should be looked over, and kept clean and free from runaways and decay.

Parsley.—This should be kept clean, surface-stirred, and dusted with common dry dust and chimney-soot round its crowns; it should also have a temporary fence, about a foot high, placed round a portion of it, covering it at night with thatched frames made of light materials, or with light hurdles or green boughs, in order to keep frost from injuring it, and to know where it can be readily got at in the event of a heavy snow-fall.

Potatoes.—Some early sort should now be put in to sprout on some slight hot-bed, such as the front of Asparagus forcing-pits, or frames, intermediate houses, &c., for transplanting next month on slight hot-beds.

Peas.—Sow these in the middle of the month, if the ground will admit of it, on a warm border, ridged or banked, to face the south-west, so as to escape the glare of the morning sun and to receive the benefit of his last evening rays. Any favourite, rather dwarf-growing early variety, such as Maclean's Advancer, Sutton's Ring-leader, Sangster's No. 1, Essex Rival, &c., will answer. Peas sown in November are subject to many casualties during winter after being up, such as depredations from birds, slugs, and mice. They are also liable to be knocked about by cutting winds, and to be injured by severe frosts. Sow just to get them peeping through the earth by New Year's-day, and then protect them by dredging in the evenings, when dry, with dry dust. Sow also about Christmas, on strips of turf placed in a cold Vinery, Peach-house, pit, or frame, in order to have even crops to plant out at the end of January or beginning of February. These are sure to do well, and to pay for any little trouble in the way of dusting and shelter which may be bestowed on them. A few evergreen boughs, placed behind them, will both shade and shelter them. Draw some earth to those already a little above ground, and also afford them some protection.

Radishes.—Sow these now freely on a light bottom-heat; also on well-sheltered borders, to be covered with litter. Sow a pinch of Lettuce-seed with them, and, if in drills, sow alternate rows of early Carrots with them; the same protection will answer for both, and both crops agree in growth and time of removing.

Rhubarb.—Take up strong roots of some early variety of this every three weeks, and place them in any kind of shed, stable, cow-house, cellar, or cave, or, better still, in the Mushroom-house, Vinery, Peach-house, or under a plant-stage. Nothing will bear more hardship than Rhubarb, or produce better or more grateful crops of wholesome stalks, even under difficulties; some should also be covered out of doors with old tea-chests, pots, or boxes, and protected with leaves or litter.

[Full directions in other departments will be found in last week's calendar.]

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

WILL you allow me to make a few remarks upon what took place at South Kensington on the 3rd inst.? The appeal to the fellows, and the council's answer were much discussed. I did not draw up the appeal. I need hardly say I believe its facts or I would not have signed it. I believe them still, though the chancery suit may be now less near than I then expected. Not all the legal talent on the council, and I admit it to be great, can explain away the great fact that while the South Kensington Garden land, bought out of the surplus of the 1851 exhibition—mainly out of the people's shillings—worth, at a low computation, £12,000 a year, pays rent (when it does pay it) only £2,400 a year, the rest of the consideration is supposed to be made up by the garden serving the great public object of promoting horticultural science. Put the value of this last to the proof. At this moment, if I were to suggest to my brother horticulturists who are now engaged in the task of reconstituting the society, or, if needs must, of making a new one in preparation of the old one falling (as it must assuredly fall before long) into our hands. If I were to suggest that we should pay H.M. Commissioners £500 a year, for the privilege of holding our committee meetings and shows at South Kensington—in fact, for its use for horticultural objects, the idea would be scouted. I should be told they must pay us for showing; they must, at least, give some prizes and charge us nothing; therefore, it surely follows that land worth, at least, £12,000 a year, for which £2,400 a year rent is paid, and that only once in five years, is being mainly used by a rich neighbourhood, who could afford to pay its value, as a recreation ground for their families. Is not this too great an abuse to be long tolerated in these days? I could hardly help laughing when told of the Kensingtonian council having been most polite to horticulturists. I thought when people had used the cat's paw to gain their object, pussy was likely to be treated most affectionately, as long as there was a chance of the paw being wanted again. Personally, I have no reason to find fault with the present council (if it be a council), except in one particular. I was not on the council they caused to resign, having gone out under the bye-law for extreme length of service, or, considering the number and length of the late council and council-committee meetings, I might say *servitudo*, before the *émeute* came. The fault I have to find is that, as I am told, the surplus money yielded by the country shows, has been applied to the general purposes of the society. I was on the council (so know the facts) when the country shows were first considered; they were new and there was risk. It was suggested by the proper authority that, as country shows could not be reckoned to the good of the South Kensington estate, the "Expenses Committee" ought not to sanction the risk. We then said we will take the risk of loss, but, as you decline risk of loss, you can have nothing to say to the profit, if there be any. Experienced people have a way of disliking risk; I thought it a plucky thing of the council, and that it proved their being strong horticulturists, or they would not have taken it. The shows did yield a profit which was considered sacred to horticulture proper. Most of the surplus from Bury St. Edmund's was put into the successful orchard-house at Chiswick Gardens. I am told (I hope it is not true) that the country shows' surplus has been used for the general purposes of the Society. The country horticulturists appear to be fairly roused, and if this be so, no Kensingtonian power or interest can long stand against them. My first letter ended with an appeal to some one, with time and a fresh head at his disposal, to come forward and take the lead. Such a leader is now more than ever wanted.

GEORGE F. WILSON.

Heatherbank, Weybridge Heath.

Most cordially do I sympathise with the remarks of Mr. Ellacombe and Mr. Elwes, on Mr. G. F. Wilson's proposals with respect to the reorganization of the Royal Horticultural Society, and most thoroughly glad shall I be to become a member if they are carried out. I have repeatedly been solicited to allow my name to be proposed as a fellow, but have always refused, because I could see no corresponding advantage. I yield to no one in a taste for horticulture, and will enter the lists with any one, in a determination, if possible, to grow whatever I can get hold of. If I belong to a horticultural society, I expect that society to help me in my particular horticultural hobbies. For instance, I am now particularly anxious to obtain living bulbs of every known species of Crocus. Thanks to the labours of Mr. Baker, the localities of all the already discovered species are accurately known. If I were a member of the Horticultural Society, it ought to help me to procure any species I might particularly want, but, as at present constituted, I might wait to the day of my death before it lent me a helping finger. A horticultural society ought to be something more than a flower-show, a parade for belles and exquisites, a resort of nursery-maids, and a convenient place for princely balls.

Rectory, Drayton-Beauchamp, Tring.

H. HARPER CREWE.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

TABLE DECORATIONS FOR CHRISTMAS DAY.

THIS is a day on which friends and relations hope to meet; therefore, a few hints on floral decorations, suitable for the dinner-table, may not prove unacceptable. Let us then give descriptions of two tables, one for those who have plenty of choice flowers from which to cut, and another for those who may not have such an abundant supply at their command, or who do not care to go to much expense if they have to purchase them. Table number one we will suppose to be about 12 feet long, and table number two about 8 feet, the width of both being in proportion to their length. As regards the decorations which I shall describe, it does not matter if the ends of the table be rounded, or if the table itself be oval, a form, indeed, which is more effective than a table with square ends. People are not, however, likely to change their tables for the sake of floral decorations, therefore I shall at once turn to table number one. Down the centre I should put three March stands, with trumpets rising out of the top tazzas, the centre stand being the highest by some inches. Round the edge of the bottom dish of the centre piece, I should place mixed varieties of Ferns, and four fronds of a golden one, turned so as to show the gold side. In the dish I would put four large Arum blooms and four bracts of Poinsettia, and then fill in with white Heaths, Primulas, and similar flowers. Close to the glass stem which supports the upper dish, I should place three large bunches of Holly-berries, and up the stem twine a spray of a small-leaved Ivy. Round the edge of the upper tazza I would put some fronds of Maiden-hair Fern to droop gracefully over, and through them mix some blooms of scarlet and white Lapageria, say two of each. I should next place in the dish four blooms of *Eucharis amazonica*, four sprigs of scarlet *Bouvardias*, and two of Holly-berries, the latter to rise above the other flowers close to the base of the trumpet, and the trumpet itself I should finish off with Roman Hyacinths, scarlet Begonias, one small sprig of Holly, and Maiden-hair Fern. Through the flowers in the two tazzas, large fronds of *Adiantum cuneatum* should be arranged, so as to wave lightly over them, and from the trumpet I should bring down four long sprays of *Lygodium scandens* to trail out on the table-cloth. The two end stands I would arrange in much the same style, only using, say in place of the Poinsettias, scarlet Pelargoniums; the Arums and Camellias I would put in the second tier, substitute Azaleas for the Eucharis, and let the trumpets be filled with scarlet Begonias and Lily of the Valley. Round the edge of the lower tazzas, some leaves of variegated Ivy can be laid out on the Ferns here and there with good effect, and plenty of Maiden-hair Fern should be mixed through the flowers. Between the centre piece and the ends stand two nicely-grown plants of *Adiantum cuneatum*, which should be dropped into ornamental china pots, and the surface of the soil should be covered with *Lycopodium*. Opposite each guest I should place, in a specimen glass, a nice button-hole bouquet, made of flowers that will look well at night. Floating on the water, in the finger-glasses, I would put three leaves of the Oak-leaved Geranium, called Lady Plymouth, the centre of each being pierced by the stem of a pip of a double scarlet Pelargonium, so as to allow one flower to rest on each leaf. So much for the floral part; let us now direct attention to the fruit. Such a table as has just been described will require a good many stands of fruit, probably ten. Fruit looks, perhaps, best arranged on glass dishes, but some like to use the stands belonging to their dessert service (if it be a handsome one) for dishing up fruit; this, however, is all a matter of taste, but the two stands, one at each end of the table, should be some inches higher than the others employed. At the top, I would put a handsome Melon, resting on a mat formed of Vine-leaves, and if the latter are tinted with colour, as they often are late in the year, so much the

better; at the bottom, a Pine should also be set on Vine-leaves, and a few sprigs of Holly-berries can be arranged round the vase of both the Melon and Pine to indicate the season. Grouped round the centre piece, four glass baskets would look well filled two with light and two with dark coloured Grapes. Four baskets of Grapes may sound a great quantity, but the baskets should be small, each only holding a good-sized single bunch. Round the handles should be twined sprays of *Lygodium*. There are now four more stands to be employed; these should be selected of an oval shape and as flat as possible, and they might be filled as follows:—with Apples, Pears, Walnuts, and Filberts, the Nuts and the Pears and Apples being placed opposite each other. Any vacant places on the table may then be filled in with smaller dishes containing crystallised fruits, ice, sugar, or anything else that may be desired. A little Fern, or something similar, may be used in the decoration of the above four dishes; but too much of that kind of ornamentation should not be employed, for the fruit itself ought to form a handsome decoration, and should require little to set it off. The fruit on the table for which I was awarded a first prize at South Kensington, in May, 1872, and that to which I awarded a similar prize at the Crystal Palace last September, when acting as judge with Mr. Harrison Weir, was arranged very much after the fashion just described. As respects table number two, in the centre a stand similar in shape to that described for table number one, would look well. A different one might be used, but a March stand is the least expensive and it is one which is to be found in almost every house where floral arrangement of any description receives attention. Round the edge of the bottom dish should be placed some nice fresh Fern fronds, such as those of *Lastrea Filix-mas*, or the common Bracken; out on these might be rested some leaves of golden and silver varieties of Ivy, the dish be then filled in with white *Chrysanthemums*, scarlet Pelargoniums, *Laurustinus*, Holly-berries, *Arbutus*-berries, white Lilac, and a few fronds of Maiden-hair Fern, and up the glass stem might be twisted a spray of variegated Ivy. Then from the edge of the second tier might be drooped some long sprays of *Selaginella denticulata*, and in the tazza itself be arranged some scarlet Pelargoniums, Jonquils, and any other scarlet or white flowers that may be at hand, and a few fronds of Maiden-hair Fern. Round the mouth of the trumpet should be put some more *Selaginella*, finishing off with a few Roman Hyacinths, scarlet Pelargoniums, Maiden-hair Fern, and two or three leaves of Pampas Grass placed outwards in a graceful wavy manner. Round this centre stand should be arranged eight specimen glasses, four the usual height and four rather shorter; these should be filled with flowers similar to those used in the centre piece. At the top and bottom, where the two other stands would be in the larger table, two well-berried plants of *Solanum Capsicastrum* should be placed, the rough pots being dropped into more ornamental ones, placing over the soil Moss such as one finds in woods, or such as is sold in bundles in the market, and pricked into it should be three pods of *Iris foetidissima*. Some white and black Grapes should be put at the top of the table, and mixed, at the bottom, Oranges and four other dishes of Apples, Pears, Nuts, and Medlars, or any others it may seem desirable to add. The selection of dishes may also be left to discretion. As the decorations of both the tables just named are in the same colours, perhaps, it might be well before concluding these remarks, to suggest the arrangement of a centre piece in white and pink; the shape of the stand being a high trumpet out of a flat tazza, with three carved ones branching from it. Round the tazza Ferns should be arranged in the same way as is described for the other stands, filling in with white Primulas, pink Pelargoniums (such as Christine), and white and pink Cape Heaths. The three curved trumpets would look well with an Arum rising out of each, the filling up being pink Pelargoniums, Heaths, and white Lapageria. In the centre trumpet a mixture of Roman Hyacinths, and pink Heaths would look well, while run through the flowers just enumerated there should be plenty of Maiden-hair Fern; and long sprays of *Lygodium* should be twined round the trumpets. At the top and bottom of the table on which these flowers are used for the centre piece, a handsome Palm would be effective. A. HASSARD.

Upper Norwood.

NOTES OF THE WEEK.

— THAT most graceful of Palms, *Cocos Weddelliana*, is now in flower in the fine collection at the Victoria Nurseries, Holloway. That it flowers and fruits freely at not more than 2 feet high shows it to be as valuable in compactness of habit as it is unsurpassed in grace among Palms. Every garden where there is a warm house should possess a plant or two of this Palm, so useful for the more select class of decorations.

— A NEW illustrated work on Orchids is announced by Messrs. Lovell Reeve & Co. It is to be issued in monthly parts, and will treat principally of Orchid culture in India and other tropical countries. Its author is Mr. S. Jennings.

— WE have received from Mr. Williams, Ryde, Isle of Wight, a very beautiful variety of *Pteris serrulata*, the fronds of which weep with a richly-fringed crest to every division of the frond; it is one of the most beautiful Ferns we have seen, and trust it may become common in our gardens.

— MR. DICK RADCLIFFE, of Holborn, has sent us some very pleasing wreaths composed of dried forest leaves, Grasses, Winter Cherries, small Pine cones, and Mosses. They are a decided improvement on wreaths formed exclusively of the rather poor everlasting flowers now so common.

— A FINE plant of *Odontoglossum Bictonense* is now in flower in the Royal Botanic Gardens, Kew. It bears several great branched spikes over 4 feet in length, and, although a poor variety of that species, is the most vigorous and profuse-flowering kind we have ever seen.

— SEVEN individuals who had eaten snails at dinner were, so says the *Montpellier Medical*, affected with sickness, diarrhoea, giddiness, fever, &c. It is well known that snails often feed on poisonous plants, such as *Belladonna*, *Digitalis*, and *Hemlock*, and on the fields from which the snails which were eaten had been gathered, were found *Box-wood*, *Euphorbia*, and *Prickwood*. It is on account of this that snails have to endure a few days' fasting previous to being eaten.

— THE *Belgique Horticole*, in noticing the completion of De Candolle's "*Prodromus*," states that, of the 13,194 pages of which the work consists, 5,950 pages were written by MM. Pyrame, Alphonse, and Casimir De Candolle; 1,475 pages by the keepers of the *Candolle Herbarium*; and 5,769 pages by various other authors. The monograph of the *Poplars* was contributed by a Belgian gentleman, M. Alfred Wesmael, of Mons. The Belgian Federation of Horticultural Societies has decreed M. Alphonse De Candolle a medal, in commemoration of the completion of this magnificent work, which was commenced by his father (M. Pyrame De Candolle) in 1818.

— OUR excellent correspondent "W. E. G." informs us that the raiser of the pretty new Daisy, *Flower of Spring*, has now produced upwards of a thousand plants of it, although it only originated with him in the spring of 1872. It is a distinct and beautiful kind, with large pure white double flowers and gold variegated foliage. It is a sport from the red-flowered *Aucuba*-leaved variety, from which only two plants thus sported; yet, in little more than eighteen months, the number just named has been placed in Messrs. E. G. Henderson's hands for distribution. It is stated to continue in flower nearly the whole year round, and, on a gravelly soil, to have withstood 16° of frost.

— MESSRS. BACKHOUSE & SON, of York, have recently received from the Rocky Mountains some very fine Alpine plants, which will make valuable additions to that class of plants. Among them are—*Gentiana affinis*, a handsome species, with the habit of *G. gelida*, but with flowers along the stem as well as in a terminal cluster, and which forms dense masses, from 12 to 15 inches high, of dark and rich purplish-blue. *Ranunculus adoneus* (Gray).—Grows from 3 to 4 inches high, and has an unbranched stalk and capillary leaves (like a minute form of *Adonis vernalis*), the flowers being circular, very large, and bright yellow. *Oxytropis splendens* (Dougl.).—Intensely silvery all over; leaves 6 inches long, stems 1 foot high; flowers red, changing to blue-purple in elongated silvery-white spikes. *Erigeron macranthum* (Nutt.).—Grows from 12 to 15 inches in height; leaves, small and narrow; flowers, large, purplish-rose, four to six in a cluster. *Pentstemon humilis* (Nutt.).—Grows from 3 to 4 inches in height; colour, deep cobalt-blue. *P. acuminatus* (Dougl.) and *P. secundiflorus*.—Two very handsome hardy species that grow from 12 to 18 inches in height, with dense showy spikes of rose-coloured or shaded bluish flowers. *Campanula Langsdorffiana*.—Dense tufts, 3 inches in height, with clustered lanceolate leaves, and erect purple flowers; very distinct. *Primula Parryi*.—Of this queen of American Primroses magnificent crowns have been received. Its leaves are lanceolate and entire, and from 4 to 6 inches long; flowers, brilliant purple, in great trusses, on stalks from 9 to 12

inches high. *Polemonium confertum*.—A charming species, bearing dense clusters of shaded purple flowers on short stalks. To lovers of Alpines, the arrival of such gems as these must be welcome news.

— *BARKERIA LINDLEYANA* var. *Centera* is now in flower in the Royal Exotic Nursery, Chelsea. It has lilac flowers, and a deep purple blotch on the lip.

— A NEW form of *Populus canadensis* is the most remarkable tree of recent introduction, for the rapidity of its growth, plants only three years old being now 22 feet in height. We have recently observed it in Mr. Anthony Waterer's nursery at Woking.

— MR. BARR informs us that the late severe frosts and fogs have had no ill effect on the beautiful autumn *Crocuses serotinus* and *longiflorus*, both of which are still in great beauty in his trial grounds.

— THE rockery at Kew, of which a representation was given at p. 379, Vol. I. of THE GARDEN, as a work of the kind to be avoided, has been entirely demolished, and another is to be erected on the same site. Let us hope that the new rock-garden may be more satisfactory than the last, which would have disgraced a suburban tea-garden.

— WE have just received from Mr. E. W. Buswell, Treasurer and Corresponding Secretary of the Massachusetts Horticultural Society, a copy of the catalogue of the library of that society. It is a neatly got-up pamphlet of 156 pages, and appears to contain the titles of all the best works on gardening and farming, published both in this country and America. We know of no equally extensive library in the possession of any English horticultural society.

— A FEW years ago Mr. Painter, of Macclesfield, says *Nature*, gave a lecture at the Town Hall upon the Geology, Archaeology, Botany, Ornithology, and Zoology of Danes Moss and its borders, when he mentioned some rare and beautiful bog plants, &c., that grew upon it. In the course of a year or two nearly the whole of them were rooted up and carried away, chiefly by strangers.

— WE have received from Messrs. Pyke an ingenious and elegant bouquet-holder, which will prove useful and become popular. It is called "the magic bouquet-holder." It has a deep receptacle for the stem of the bouquet, which is a good point. When not in use by simply touching a spring the holder is converted into a stand for the table.

— SOME good bulbs of the beautiful new Californian Lily (*L. purpureum*) were sold by Mr. Stevens on Thursday last, when they realised from 10s. to a guinea a bulb. Lovers of hardy plants will look forward with interest to the flowering of these fine Californian Lilies. Of their hardiness there need be no doubt, as we have seen them growing abundantly in the Sierras, at elevations where snow falls early and remains long.

— THE committee appointed by the council of the Royal Agricultural Society to adjudicate the prize for the best essay on the Potatoe disease and its cure, do not advise its being awarded to any of the competitors. They recommended, however, that a sum of money be granted for the purpose of inducing a competent person to investigate the life-history of the *Potato-fungus*, *Peronospora infestans*, and that the society should offer prizes for kinds of Potatoes that would resist disease during experiments to be continued for three successive years.

— ACCORDING to the French papers a special commission is being organised, under which will be placed the whole care of the decoration and arrangement of all public open spaces, large and small, from the Buttes Chaumont down to the tiniest square. The members named are Messrs. Guillaume, Director of the School of Fine Arts; Longpérier, Member of the Institute; Baltard, and Duc; and their powers are to be specially exercised in ornamenting the various places with statues of persons eminent in Parisian annals, and groups illustrative of notable Parisian events, for which object it is proposed to allow them a vote of £10,000 or £12,000 annually.

— MR. GILBERT, of Burghley, writes to us as follows:—"At the International Horticultural Meeting, at Manchester, in September, the society offered prizes for seedling Grapes and Pine-apples, and, although this was a step in the right direction, still it did not include all seedling fruits, which was an omission. I would suggest that the Royal Horticultural Society should take the work in hand and include, at least, Strawberries and Melons, the latter of which are to come out in great force next year. Now, without finding fault with the good work done by the fruit committee of the Royal Horticultural Society, which is, indeed, the only tribunal we have at present, I should say it is an utter impossibility for them to say which is the best seedling fruit of the season, when they have not had an opportunity of seeing and tasting all at the same time. The same test, by doing this, would give purchasers an opportunity of buying the premier variety of the season, and save them the disappointment which new trashy varieties occasion."

THE ARBORETUM.

HARDY TREES AND SHRUBS.

By GEORGE GORDON, A.L.S.

THE GLAUCCOUS-LEAVED HIMALAYAN MAPLE (*ACER GLAUCUM*, WALLICH.)

THIS very distinct and rare kind forms a large tree, with a wide spreading head, and smooth light brown glossy shoots, furnished with numerous small elevated glands, and small pointed buds covered with imbricated downy scales. It is a native of the Himalaya Mountains, where it grows at an elevation of 8,000 feet, and was first introduced by the Royal Horticultural Society in 1845. The leaves in general are



The glaucous-leaved Himalayan Maple.

rather large, and in opposite pairs, but they vary very much in shape and size, the larger ones being somewhat hastate and long-pointed, and either three-lobed, or furnished with a lateral lobe on one side only, and mostly with a few blunt distantly-placed serratures along the margins, while the smaller leaves are oblong, lanceolate, long-taper-pointed, and mostly entire on the edges; they are all of a deep shining green above, pale green and glaucous beneath, leathery in texture, quite smooth on both surfaces, rounded or slightly cordate at the base, and in general set on long and rather stout foot-stalks, tinted with red. The lobes are unequal in size, the lateral ones being short, spreading, and much the smallest; while the central one is large, ovate, and terminated by a long tail-like acute point, and furnished on the edges with a few uneven blunt serratures.

The length of a full-sized leaf is 12 inches, including the foot-stalk, which is from 4 to 5 inches long, and the breadth (from point to point of the lateral lobes) is 6 inches.

OLD TREES AT HAMPTON COURT.*

By JAMES M'NAB, Royal Botanic Gardens, Edinburgh.

IN September last, I made an inspection of trees, both young and old, in the Home Park, at Hampton Court. I have frequently been struck with the beauty of the noble avenues there, composed chiefly of Elm and Lime trees, but never till this year did I so minutely examine the other trees which stand apart, and which have existed on these grounds long prior to the planting of those which compose the avenue lines. Some account of these venerable specimens must exist in the blue books, but I have not the means of finding them out. I have, however, much pleasure in laying before the members of the Botanical Society a few remarks regarding their present condition. I shall begin with the Lime trees, which are very numerous and healthy, many of them averaging from 8 to 10 feet in circumference. The largest specimens examined are standing at the extreme east end of the south avenue line, one being 12 feet 6 inches in circumference, another 15 feet 6 inches, and another 16 feet, at 3 feet above the ground. They average from 110 to 120 feet in height, and stand 40 feet from the ornamental canal water-line, and 18 inches above the water-level. The roots must therefore be abundantly supplied with moisture, and perhaps it is owing to this that they are all in a vigorous and free-growing condition. The other large trees were either standing singly or in groups, the Elms being the most numerous and by far the most conspicuous. The largest living specimens noticed were thirteen in number; one 19 feet 8 inches in circumference, two 20 feet, one 21 feet 4 inches, two 22 feet 3 inches, one 23 feet, one 23 feet 6 inches, one 24 feet, one 24 feet 10 inches, two 25 feet, and one 27 feet 6 inches. Many of these trees are very much decayed at the heart. The outside bark of some of them is densely covered with large hemispherical excrescences, which are thickly set with a mass of small twiggy branches. In the stems of these large old Elms (particularly those which are hollow) many holes are observed about 3 or 4 feet in diameter. These openings are all surrounded with peculiar, large, rounded growths. The upper portion of the under side is generally covered with numerous young twigs from 2 to 3 feet in length, which, with the excrescences just alluded to, may account for the peculiar bony-looking appearance which these stems assume after death, and when the bark comes to be removed. The largest Elm is in tolerably good condition. At 3 feet above the ground it measures 27 feet 6 inches round, and, at 6 feet up, 41 feet, the diameter from east to west being 18 feet. This is a peculiar-looking stem, possessing much vigour. Many of these venerable specimens could have additional strength thrown into them by having a quantity of fresh soil laid on the surface—previously loosening it, however, with a pick-axe; this surfacing to be continued as far out as the extreme points of the living branches, and each tree afterwards surrounded with a rail fence to protect it from injury. This might be the means of prolonging their existence, and rendering them interesting for many years to come. These relics of antiquity are now becoming scarce from want of proper care and protection; and, if anything can be done to prolong their existence, it is right to do so. The stumps of three decayed Elms are very remarkable, and also well worthy of preservation. They are all hollow, and their tops completely gone; and it is curious to observe that the outside wood of these specimens, where the bark has been wholly removed, is quite white, hard, and of a strong bony consistency, the surface having a peculiar wavy appearance, as if they had been growing, or rather spreading, long after the centre of the tree had been decayed. Of these dead stumps, one measures 22 feet 3 inches in circumference, one 23 feet 6 inches, and one 25 feet 4 inches. The last is called the "Pulpit Elm," from its resemblance, on one side, to that piece of church furniture. It stands 8 feet high, and is quite hollow. I found it difficult to form any idea of the age of these

* Read before the Botanical Society at Edinburgh, 11th December, 1873.

stumps. The annual circles of some of the softer portions inside of the hard outer crust, averaged about one-eighth of an inch in thickness, while in the hard compressed outer crust, with the aid of a microscope, twenty-four apparently annual circles can be traced within the space of one inch. As recommended for the living trees, these stumps ought also to be protected by suitable fencing. I observed coal-ashes in one of them, and, if this desecration be continued, it will soon make an end of these remarkable objects. The large Oaks observed were only three in number; one measured 16 feet round, one 19 feet 6 inches, and one 36 feet, the largest being by far the healthiest. On the surface of the ground the trunk of this tree is 43 feet 6 inches in circumference, at 3 feet up 36 feet, and at 7 feet up it was again 43 feet 6 inches. It divides into three large limbs of nearly equal size. The centre of this tree is quite hollow, and the circumference of the internal space is 24 feet. The main branches have all been broken off about 20 feet up, but, notwithstanding this, the tree looks the picture of health. The spread of its branches is 50 feet from east to west. Three or four large dead staghorn-looking branches protrude through the green leaves in different directions. It is a very picturesque specimen, and well worthy of being protected, along with the other Oaks and in the same way as was recommended for the Elms, both by a surfacing of fresh soil, and by being surrounded with a proper fence, so as to throw fresh vigour into them and keep them alive as long as possible. The ground round their stems, from being so much trodden on, is, at present, excessively hard, so that little moisture can percolate through the soil to the roots, and this must hasten their decay.

Of late years, all our old ruined palaces, abbeys, and ecclesiastical buildings are receiving much attention in order to prevent them falling into decay, or being carried away piecemeal for dykes and farm-buildings, as used to be the case. These ruins are now rigidly protected, and sums of money are annually voted for their preservation. It would be desirable to see all our old trees, wherever they exist, equally well cared for, by root-feeding and stem-protecting, as well as sheltering from inclement weather the decaying stumps of remarkable specimens. This is a subject of much importance, and well worthy of the attention of the Arboricultural Society. Members of this influential body are scattered over the three kingdoms: with a little exertion on their part it would be interesting to have returns of all remarkable or old trees collected, arranged, and published in their transactions. The society should also issue instructions for the strict preservation of all arboricultural objects of interest throughout the country. A feeling prevails that when trees are old and going to decay, it is needless to try to preserve them. Such feelings should not exist. When the bark and inner portion of the wood are alive, it is quite possible, by the aid of feeding and fencing, to throw increased vigour into some of these old specimens, and thus render them objects of interest for many years to come. If they are dead and reduced to stumps, they are even then interesting, as showing something of what the trees really were. I have always very great pleasure in looking at such remarkable remains of old trees, and I am sure many others must have the same feeling.

Linoleum and Dry Rot.—Mr. Alexander, the town architect, of Dundee, has reported to the Town Council upon the decay which has lately appeared in the woodwork of the New Town House Buildings. He says that, so far as he had been able to discover, the cause of the rotting was to be found in the early covering of the wood with linoleum. The impervious nature of the floor-cloth had prevented the moisture from escaping, and had resulted in a firing action in the wood, reducing it in some cases almost into tinder. To remedy the evil, he proposes to lift the joisting, deafening, and flooring so far as affected, and to replace the same. He would also recommend the inserting of ventilators below the floors in the outer walls, and the causing of a draught by leading these into the centre of standard partitions. The floors should also be left for a considerable time uncovered, and carefully scrutinised, as, from the insidious character of the evil, every precaution was necessary. The architect of the building, Mr. Willison, and the Inspector of Works concurred in opinion that the rot was caused by laying the linoleum too soon over the floor. Further experiments are necessary, however, to prove that, in such cases, linoleum is the cause of dry rot.

FLORIAN'S ELM.

IN the Commune of Gagny, Seine-et-Oise (says the *Illustration Horticole*), on the estate of the Marquis de Nicolai, there still exists an old Elm, under the shade of which the poet and novelist Florian loved to sit and dream. This venerable tree has long been known as "Florian's Elm," and the path which runs close by it has been named by the simple country folk "*Le Sentier de l'orme Florian*" (the path by Florian's Elm). Recently, M. Laribbe, a landed proprietor at Gagny, in conjunction with the Maire and the Municipal Council, thinking that the tree should be preserved for the sake of its associations, proposed to M. Nicolai that some steps should be taken for this purpose. M. Nicolai readily accepted the proposition, and the tree is now surrounded with a railing, outside of which have been placed stone seats for the accommodation of admiring visitors. A stone tablet, fastened to the tree with a collar of bronze, bears the following inscription:—

Florian me chérit; mon ombre l'inspira;
J'espère qu'à mon tour son nom me défendra,

which may be freely translated as follows;—

My shade inspired the lines that Florian penned;
Let Florian's name my aged trunk defend.

W. M.

Trees as Historians of the Past.—M. Charles Gros has recently communicated a note to the French Academy of Sciences on the study of the yearly rings, shown when the trunk of a tree is transversely divided. These layers by which, as is well known, the age of the tree may be determined, do not diminish in relative thickness by a constant law. In view of this, M. Gros seeks a cause for the irregularity, and, it seems, has arrived at the conclusion that the data, mean and extreme, of meteorological phenomena, when known and tabulated, might be compared year by year with the annual ligneous layers formed during such periods in many different varieties of trees. From the comparison, it is not impossible that some interesting ideas relative to the laws of development of trees may be obtained. But, moreover, these laws once established, the trees in their turn might become precious collections of meteorological evidence for places and times where observations cannot be made. *Les Mondes* suggests rather a striking example of what might be learned from ancient trees, as follows: "Suppose that there should be found in Egypt a very old, though living, tree, the origin of which dated back to the time of Joseph. If, on cutting the trunk, the rings corresponding to that period showed seven thick, and seven thin layers, there would be tangible evidence of the truth of the Scriptural tradition of the seven years of plenty and seven years of famine, besides of the immediate causes of humidity, temperature, &c., to which such phenomena might be due."

Street Trees.—Mr. John Jay Smith, of Philadelphia, and editor of that fine work, the "*North American Sylva*," has recently expressed his views in relation to the proper species of trees for shading our streets, with hints for their management. Attention is called to the fact that we cannot judiciously plant fruit or nut-bearing trees along our side-walks, nor even handsome flowering trees. Then, again, we are restricted to those which will flourish in smoky towns, thus debarring the evergreen family. In many instances streets are quite narrow, often only 30 feet wide, so as to afford insufficient space for the larger trees. The Silver Maple is recommended above all others for a popular street tree, provided it receives proper care when young; but "it wants attention every week during the growing season, if we expect good results." Trim when young, is our writer's advice, and never allow it to form large limbs to be cut away in after years. He recommends the Sugar Maple highly; and, among smaller-sized trees, suggests the American Red Bud or Judas tree. Attention is called to the claims of the Magnolias, and the Yellow Wood or Virgilia. The Deciduous Cypress, the Weeping Cypress (*Glyptostrobos sinensis*), and the Lindens are all worthy of a place in the list. Some of the Oaks, Kentucky Coffee-tree, varieties of Ash, Native Beech, Copper Beech, Fern-leaved Beech, and the Salisburia are all fine. The species known as the Slippery Elm appears to be an exception. He says the Norway Maple casts too dense a shade for the street(?); the Sycamore Maple is a more rapid grower than the Silver; and, among Oaks, the Overcup (or *Quercus macrocarpa*) is the fastest grower of all. In broad avenues of 80 or 100 feet in width, Oaks, Hickories, Tulip-trees, Poplars, and many others may be used.

A Variegated Walnut-tree (*Juglans laciniata variegata*).—This remarkable variety was raised in the garden of the Muséum at Paris from seed of *J. regia laciniata*. The leaves, and occasionally the bark of the branches, are pleasingly variegated with yellowish-white, which contrasts finely with the lively glistening green of the rest of the foliage. The variegation did not appear until about the second year of the growth of the plant.

GARDEN DESTROYERS.

INSECT PESTS AND HOW TO DESTROY THEM.

I AM glad to find that Mr. Baines (see p. 494) has taken this matter in hand, as, from his long experience and accuracy of observation, few men are better fitted to deal with it. By way of furthering the work, allow me to record my own practice in reference to the following pests.

RED SPIDER.—This is brought out by a dry over-heated state of the atmosphere, and by allowing the plants to become dry at the root. We frequently find plants from cold temperate climates kept in close badly-ventilated stoves, a condition under which they soon become debilitated, and fit subjects for an attack of insects. We seldom find thoroughly healthy plants to suffer much from such pests; consequently the cure requires as much or more attention than the cure. Our most efficacious destroyers are composed principally of soap, sulphur, and Quassia water. The most effectual preparations which I have used are Veitch's Chelsea Blight composition and Frettingham's liquid compound. These are efficacious in application, and leave no objectionable sediment upon the leaves. Red spider is best destroyed by a free use of the syringe and applications of sulphur to the pipes; $\frac{1}{4}$ lb. of soft-soap, whisked until it has become dissolved, to a gallon of water, applied with the syringe so as to thoroughly wet the leaves, is a most effectual remedy for this pest.

THRIPS.—Nothing destroys this better than fumigating with tobacco-paper, repeating the operation every fifth evening for three nights in succession if much infected; afterwards wash with weak tobacco-water, or, better still, with the compositions just recommend.

GREEN AND BLACK FLY.—For these fumigate, or use a blight composition wash; for the former a cheap wash may be made by mixing two ounces of Quassia chips with a gallon of boiling water, allowing it to stand ten hours previous to its being used. Powdered tobacco also makes a good destroyer, shaken on the parts affected, while wet, through a dredger.

BROWN AND WHITE SCALE.—Dressings of Veitch's composition will clear plants of these pests. The plants should be laid upon their sides and syringed with water at a temperature of 140°, being careful that the water reaches every part affected, and that it does not run too freely into the soil, which would be apt to destroy the roots. I have syringed fruit trees out-of-doors whilst in a dormant state with water at 180°, thoroughly destroying both scale and the Pear leech. The white scale is most effectually destroyed upon Pines, Gardenias, and similar plants, by placing them upon steaming-hot manure. This summer I saw a batch of imported Pines white with scale most effectually cured of it by being set on planks over steaming manure in such a way that the manure could be renewed when the pit, in which they were placed, became low in temperature. This is the best plan which I have seen tried for effectually destroying scale upon Pines.

ANTS.—Bottles with water and sweet oil sunk in their runs will be found a good remedy. In houses where they are difficult to get at, a quartered orange placed in their haunts will be found to be a most effectual bait, which, when covered with ants, should be dipped into a pail of hot water. Sparingly-picked bones, as recommended by Mr. Baines, also form very good baits. Boiling water poured on the nests at night will likewise destroy them, as will also a coarse sponge dipped in treacle water and when full of ants cast into scalding water.

WOODLICE.—Dry hay put in punnet baskets in which is placed a partially boiled Potato, the whole being shaken into boiling water in the morning, forms a very good trap for these destructive pests, as also do scooped-out raw Potatoes placed near their haunts. Boiling water poured along the walls will likewise destroy thousands, and toads allowed the run of houses infested by woodlice also keep them in check.

SLUGS.—In houses nothing forms so good a trap for these as Cabbage leaves warmed in an oven till hog's lard can be spread over their surface; then let them be placed over-night amongst the plants, when the slugs will be found under them in the morning. In the open garden a brood of young ducks makes great havoc amongst them. Fresh slaked lime cast over the

ground now and then will also effectually destroy all upon the surface.

WIRE-WORMS.—These, being hard-skinned, are difficult to destroy. Where very plentiful, if the soil is at all clayey, pare and burn 9 inches in depth of the whole surface; that will most effectually clear it, not only of wire-worms, but also of other vermin. Two tons of gas-lime per acre mixed with sand and spread on the ground in autumn, afterwards digging it in well, will likewise destroy them. They may be, moreover, to a certain extent, kept under by clearing carefully off all roots and rubbish, an operation which removes a quantity of grubs with it. Wire-worms are very partial to Lettuce roots. I have seen Lettuces planted purposely to decoy them, removing and burning the whole as soon as the insects had established themselves.

EARWIGS.—These are easily trapped in pieces of Bean-stalks a foot or so in length, shaking or blowing their contents into water every morning.

FRUIT TREE DRESSINGS FOR INSECTS.—As a dressing for Vines, Peaches, and Figs, nothing is better than Gishurst compound, adding clay to bring it to a proper consistency for painting, according to the directions given with each box. A good dressing may also be formed by compounding together 4 ounces of soft-soap, 4 ounces of flowers of sulphur, 1 pint of tobacco-water, quick-lime and clay being added in sufficient quantity to bring it to the consistency of paint. I shall be glad to be furnished with the experience of others as to what insecticides are found by them to be most successful; as by comparing notes something definite may be arrived at on the subject.

GEO. WESTLAND.

Witley Court, Stourport.

WEST INDIAN SCENERY (CUBA).

SOMEBODY ahead has exclaimed, "Miren!" (look). We look, and behold a distant view of Don Severiano's "cafetal" (Coffee plantation). The path has become narrower, and we are encompassed by short thick hedges, dotted with red and black berries of a form not unlike diminutive Olives. I pick and open one of these berries, and somebody observing, "Que café tan abundante!" (how plentiful the Coffee is!) I discover that what I have plucked is Coffee in a raw state. "Que admirable es la naturaleza!" (how wonderful is nature!) sings a Spanish dramatist. Nature is, indeed, much to be admired, especially when you are viewing her in Orange groves, where Oranges, for the trouble of picking them, hang invitingly over your very mouth, seeming to say, "Eat me, stranger." Some are small and green as Gooseberries; others are as big as your head, and of the bright hue to which they give a name. Next on the carte of nature's dessert are the heart-shaped smooth-skinned Mangoes, with their massive and symmetrical tree. They are followed by a procession of Lime-trees, Citrons, Nisperos, Granadas, Maranones, Anones, Zapotes, Mamoncillos, and a host of other fruits with strange shapes and equally odd Hispano-Indian appellations. I grieve to relate that the king of fruits—the princely Pine-apple—is far from being the exalted personage you would have expected him to be. Like a Bachelor Cabbage, he grovels in solitary state under our feet! We play at marbles with Pomegranates, and practice tilting at the ring with Citrons. Throw into the scene a few parasites and Plantain trees with slender trunks and colossal leaves; fill in the foreground with gigantic Ferns, Aloes, and Palmettoes, and the background with spotless blue; select for yourself from the nearest hot-house where specimens of exotic plants are nursed, and you are with us, dear—and none the less dear for being imaginative—reader!—"The Pearl of the Antilles," by W. GOODMAN.

Weeds in Ireland.—Dr. Macaulay, who made "a tour of observation in Ireland in 1872," declares that the amount of weeds in that country is a national disgrace. Fields and road-sides are alike neglected, and he is sure it is no exaggeration to say that the direct annual loss from this cause alone is above a million and a half sterling. It appears that an effort is made of late to remedy the evil. The secretaries of the National Education Commission say that their inspectors will be directed to see that instructions are given to the half million children attending national schools as to the necessity of destroying all weeds found on the farms of their parents, or the adjacent highways. The officers of the Church Education Society, who superintend the education of 70,000 children in Ireland, make a similar engagement.

THE FLOWER GARDEN.

WINTERING DAHLIA ROOTS.

THE roots of these should not be left in the open ground all winter, even although mulched. By leaving them in the ground they are liable to rot, or to start prematurely in spring. I would, therefore, advise all growers of Dahlias to lift them on a fine dry day in the end of October or in November. With a stick carefully remove the bulk of the soil from between the tubers, which lay out root-end upwards on a walk or border, so as to get well dried before evening, when they must be taken under cover. Should the next day be fine, spread them out again as just directed. The small Pompones, or bouquet-flowered Dahlias, I would recommend to be placed on a dry shelf in a cool airy shed or cellar. The commoner show varieties and the dwarf bedding kinds can be stored in heaps in the same place, provided they are thoroughly dry, and some dry sand mixed amongst them. Keeping them in hampers and boxes in the same place is a good plan, but care should be taken under all circumstances to preserve them from wet, and to keep them in a temperature below 45°. During winter the roots should be occasionally looked over, and all decaying portions cut away and the wounds rubbed over with silver-sand or powdered charcoal. At one place where I worked we had a great quantity of all sorts of Dahlias both for flower-garden and shrubbery decoration, and, consequently, the safe preservation of the roots was important. The finest sorts we arranged on shelves in an unoccupied underground stoke-hole in which there was good ventilation, and, when they had become thoroughly dry, some clean straw was spread over them, and as long as the weather was not frosty the ventilators were left open, but in frosty weather they were stopped with a wisp of straw. Here they kept with scarcely any loss, but we found the Pompones the worst to winter. Having neither time nor convenience to spare as regards the commoner show kinds and bedding kinds, such as *Zelinda alba floribunda*, &c., after drying them, we stored them away in out-of-door pits, just like Potatoes, and never again looked near them till spring-time. Two-inch drain-tiles were inserted in the pits for ventilation, and in the event of rain and frost, these were plugged with hay or straw. W. F.

ANDERSON'S SPEEDWELL.

(*VERONICA ANDERSONI*.)

THIS variety of Speedwell is one of the most useful plants in cultivation, either for window, conservatory, or out-door decoration. A few remarks concerning it may not, therefore, be unacceptable. It requires no special care, is evergreen, ornamental in leaf, and beautiful when in flower. It is, perhaps, best described as a hardy greenhouse or cool conservatory plant, though it is not by any means so tender as most others grown in these structures, and it will stand with impunity several degrees of frost. In the warmer parts of England it is treated as an out-door plant or shrub, and it will survive a mild winter in many favourable parts of Scotland. I have seen some specimens of it from 10 to 20 feet in diameter, and 8 feet high, grown in exposed positions in the Isle of Wight, where they are also extensively used in shrubbery borders and for centres to large flower-beds. One of the finest plants of this Speedwell which I ever saw I observed in the gardens at St. Clare, Ryde, under the care of Mr. Meehan. At Upton House, Alresford, too, there is a very handsome example of this shrub planted against the eastern end of a greenhouse wall, where it was placed three years ago last spring, and where it has remained ever since without protection, not only uninjured, but has always flourished and flowered profusely. It is now some 3 feet high, forms a close and handsome bush, 4 feet through, and flowers abundantly from July to November. Mr. Donald, gardener to Mr. Barclay, at Leyton, informs me that he has ascertained from experience that the variegated variety of this Speedwell is the hardiest. At Kew, too, I find that there have been several varieties of shrubby Veronicas planted against the wall of the "economic" and Victoria houses in the "new

range;" but, although they flowered well during the past autumn, it remains to be seen whether or not they will survive our winters out of doors, as they have only been planted where they are last spring, having previously been grown in the winter garden, where duplicates of them still are kept. In Ireland, many fine specimens of *V. Andersoni* are grown out of doors; but there the climate is more favourable for such plants than it is with us. When allowed to grow too vigorously out of doors, they soon assume a straggling habit, but when judiciously thinned in spring, and otherwise treated so as to produce moderate growth, they flower and stand vicissitudes of weather better than plants that receive more liberal treatment. Should any doubt, however, exist as to their wintering safely, they may be covered with a mat, or protected by means of a thin thatch of Broom interwoven in a network of rope-yarn, dried Fern, Asparagus straw, Pea or Bean haulm, or other material of that kind, during frosty weather, and uncovered throughout the day, and altogether in mild weather. A mulching of leaves, Cocoa-nut fibre, or litter, ought also to be placed over their roots; for, by this precaution, their stems are often saved when their shoots are entirely destroyed, and they break again in spring and form good fresh plants. Out-of-door plants, if left uncut, bloom from July onwards, but if pruned hard in spring, they form a large quantity of young wood that flowers late, and is often too soft to safely withstand our ordinary winters. Wherever plants of this Speedwell are grown, the sub-soil should be open and porous, permitting a ready escape of all moisture; for, if otherwise, a sickly constitution and soft watery unripe growths will inevitably be the result.

Pot Culture.

This Veronica forms one of our most accommodating pot plants, and thrives well in a good sandy loam enriched with decayed manure. Pots about 6 or 8 inches in diameter are quite large enough for it, and it enjoys abundance of water from the time it starts into growth until it ceases flowering, when the supply should be gradually lessened, though never entirely withheld. In this stage the plants are available for conservatory decoration, or for parlour or window ornaments. For windows, indeed, it is one of the best of plants, for its glossy green leaves, if sponged now and then, always look fresh and green, and its longevity and floriferous character, under such circumstances, are also recommendations not to be overlooked.

Propagation.

This Speedwell may be increased readily by means of cuttings of the young shoots slipped off in spring with, if possible, a heel attached to them. Remove the two base leaves and cut the heel cleanly with a sharp knife, then insert them in silver sand or half sand and half sifted leaf-soil, in a brisk heat. Here they must remain for a few weeks till rooted, when they should be lifted and potted into 60-sized pots, and, as they advance in size, they should be shifted as required, until they occupy 6-inch pots. Those who have no artificial heat, such as is afforded by hot-water pipes or a dung-bed, should not attempt to propagate this Veronica till July, when the young stubby growths may be selected and treated like those of Verbenas, that is, struck in a cold frame. Care ought to be exercised in choosing the shoots; the points of the strongest young growths have rudimentary flower-trusses visible at every joint; consequently, such growths as do not possess these are the most serviceable for producing young plants.

As a Winter-Garden Plant.

This Veronica is seen to best advantage when planted out in some good soil in a cool conservatory or winter-garden. Thus circumstanced, it grows so quickly that annual thinning and pruning of the shoots are essential. Here they continue to flower very late in the year, and, being under protection, their blooms always perfect themselves, and are extremely serviceable where cut flowers are in demand. In cutting, remove the flower-spikes only; for, if the points of the shoots are sacrificed, the plants are checked; whereas, if left undisturbed, they will continue to bloom, grow, and flower almost incessantly.

As a Bedding or Vase Plant.

Young plants of this Speedwell make good bedding plants, especially the variegated-leaved sort, which has precisely the

same kind of habit as the green-leaved kind, and which is more effective than that sort in the flower garden, in which it makes a good substitute for variegated Pelargoniums. As a vase plant the variegated variety is also most effective, especially when associated with Creeping Jenny, Tropæolums, or Ivy-leaved Pelargoniums, and the plants of it used, both for bedding purposes and for vase decoration, should be lifted and potted in October, and placed in a pit or greenhouse during winter. Besides V. Andersoni, there are also other good kinds of shrubby Veronicas, such as Imperial Blue, Violacea, Madame Bouchardet, hybrida, salicifolia, meldensis, and Hulkeana.

WM. FALCONER.

WIGANDIA CARACASANA.

WELL-GROWN specimens of Wigandias are very effective planted out on sheltered portions of the lawn or pleasure ground during the hottest of the summer months. They are easily propagated in the spring by means of cuttings, and, if the thick roots are cut off in the autumn, when the plants are taken up for removal indoors, a large proportion of them will form young plants, if planted in light sandy earth, on a genial bottom heat. This species of Wigandia is a very quick grower on warm rich soils, often attaining a height of 6 or 7 feet in a single season. Where it does well, it is a noble subtropical plant, its broad foliage being of a fresh green colour, and forming a charming relief to the brilliant scarlet and yellow which are the prevailing colours of ordinary bedding plants. During the winter months, the old plants may be stored under the stage in a warm greenhouse or Vinery, and these old stumps will furnish an abundant supply of cuttings in the spring. The Wigandia rarely flowers in our climate, but, as is shown in our illustration, it produces a large scorpioid inflorescence at the top of a thick fleshy stem. It may be seen growing vigorously at Battersea and in the other London Parks during the summer months, and there its large foliage is seen to the best advantage. A little well-rotted manure, added to the compost in which it is grown, will be found to be beneficial to it, and it requires a liberal supply of water when growing.

Wigandia caracasana.

EARLY SPRING FLOWERS.

(DAISIES, AUBRIETIAS, HEPATICAS, AND PRIMROSES.)

I HAVE grown a good number of Daisies in days gone by, but have found none so good, either for bedding or for gathering from, as the fine double flat-petalled white, and the rich crimson double-quilled, that are so largely grown for the London market; the latter, especially, is very effective as a brilliant red hue, in any spring garden, and is, in this respect, perfectly unique. I have been surprised to find how little the Aucuba-leaved Daisy is known around London; but I am not surprised to find people expressing admiration for it when

they light upon it in my garden. It is a veritable gem; and, whether in or out of flower, it is always cheerful and attractive. Certainly the showiest form of it is the crimson-flowered; the pink is also very pleasing; but the white-flowered one that I have seen is far from nice; the colour is not pure, and a dirty-white flower upon a yellowish-green ground is anything but pleasing. The earliest of all the Daisies I have known is a mottled flower, red and white, not to be confounded with the large crown-flowered kind; but a moderate grower and a capital bedder. There being no demand for it here, I have allowed it to pass out of my hands; but it is, nevertheless, a most useful kind. Daisies serve various purposes; but in no way are they so useful as when employed, with other spring-blooming plants, to work out pleasing designs in the flower garden. I do not think that the largest-flowered sorts are so effective as those that have medium-sized flowers, distinct in colour, with stiff erect stems. The large-

flowered ones are, however, very useful for gathering and bunching, when, as early flowers, they always find a ready sale in the London markets. I could wish that some amateur enthusiast, like your correspondent, "W. E. G.," would take in hand the Aubrietias, and collect and cultivate all the known varieties, so that we, who have neither time nor space to devote to such a work, might benefit by the results of such labour. No lover of hardy plants can make up entire collections of all kinds, but, by taking one section in hand in earnest, much good work may be done. The Hepatica presents another lovely family of spring plants that are not half enough known. I do not know how many kinds of it there are in cultivation. My own collection comprises double red and double blue; single red, white, and blue; angulosa, large single blue; and triloba, single blue. Perhaps the mention of these may attract the attention of others, and induce them to state what other kinds may be known or cultivated. The double Primrose presents a beautiful class of early border-flowers, some of the sorts being common, but others scarce. I have

been engaged in gathering together all the kinds I can obtain, making about ten sorts, the latest addition being a pale lavender-white, evidently a sport from the old Lilac. How did double Primroses originate? Any information on this point would prove most acceptable.

D. A.

New Bedding Pansies.—We beg to send you a few blooms of some of our seedling bedding Violas and Pansies gathered from plants left over in the open ground, and which have continued to flower in great profusion since April last, and at present look as if they would go on blooming for a long time yet to come, judging from the number of buds on the plants. As the latter are growing in our nursery in the town, the flowers are not so clean as they would be in the country.—DICKSON & Co., 1, Waterloo Place, Edinburgh. [Of the Pansies sent, all of which are pretty, the best are Blue Bonnet, deep blue, with a yellow eye set in a black blotch. No. 1, bright yellow, blotched with rich dark maroon, large and of good

substance; and what is stated to be a "new colour" i.e., a kind with violet-shaded plum-coloured flowers. Two varieties marked "show Pansies" are also large and handsome.]

An Ornamental Golden-Rod.—There are, according to the *American Agriculturist*, nearly forty species of *Solidago* found in the Northern States of America alone, and, while some of these are widely distributed, others are restricted to a few localities. There are a few of these rarer Golden-rods which make a fine appearance in the garden, as they bloom after most of the autumn flowers have disappeared. Among these, none is finer than the Stiff Golden-Rod (*Solidago rigida*). This species is found from Connecticut to Wisconsin, and southward to Arkansas and Texas, but not usually in abundance. The flowers are larger than in most of the other species, and of a bright yellow colour. The leaves are thick and rigid, the lower ones being oval or oblong, with a long petiole, while the upper are sessile. It grows to a height of from 3 to 5 feet. Besides *S. rigida*, there are a number of others which are worth a trial, though we have only grown *S. odora* and *S. sempervirens*; this last has thick fleshy leaves, the lower of which are a foot or more in length, and is found in marshes along the sea-coast. *S. Ohioensis*, *S. Shortii*, and *S. Riddellii* are handsome species to add to a collection of herbaceous plants, and there are probably some southern ones which might be grown in northern districts with a little protection during winter.

Sanitary Value of Flowers.—A writer in the *Rural Carolinian* gives the following facts in confirmation of the sanitary value of flowers:—"In August, 1866, I bought," he says, "a small house in the upper part of Charleston, in a locality where fevers were of frequent occurrence; I at once set to work, drained as much as possible the lands around the house, and laid out the grounds for a flower garden. My friends predicted that before the end of the year I would leave the locality on account of the prevailing fever. I did not mind them, but kept steadily improving my property. During the winter I had planted a great many Rose bushes, Oleanders, shrubs, &c., as also a few Fig and Peach trees. In the spring, I planted a great many summer flowers, as well as Lavender, Mint, and other sweet-smelling plants, and, wherever a small space was left, I planted Sunflowers. The consequence was, that although several of my neighbours were attacked with fever, I escaped with my family entirely, and have not had fever to this day. Several of my neighbours have followed my plan, and the locality is now almost entirely healthy." [It may be remarked that the draining of the ground should be credited with a part of the good results thus recorded; but there is no doubt that the odorous emanations of plants and flowers, or the ozone generated thereby, will do much to neutralise or destroy the miasmata of malarious districts. The cultivation of flowers in such localities will, therefore, be found a valuable auxiliary to other hygienic measures.]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Alternantheras in the North.—Will some of your northern correspondents tell me if they find *Alternantheras* to succeed in beds out-of-doors in the north, and, if so, which variety?—J. S., *Glanton*.

Rosa yvra.—This species, lately described in the *Revue Horticole*, was introduced from Japan about 1855, and is only to be found in the possession of a few amateurs and botanic gardens. It forms a bushy shrub, the young branches of which are covered with reddish-green bark, ultimately changing to reddish-brown. The flowers appear in June and July, and are pure white, single, and nearly 3 inches across. It would be interesting to try what kind of a stock this would form for budding purposes.

Christmas Roses.—I have just seen a plantation of the different forms of Christmas Roses beautifully in bloom. The varieties consisted of *Helleborus niger*, the common kind, *H. n. maximus*, a larger variety than that just named, and *H. m. minor*, a diminutive form. These, when seen in good condition, are unrivalled at this season of the year. They succeed best on a warm sheltered mossy bank, a position in which they are secured from earthy splashings; but they also grow and flower admirably in borders or on rock-work in almost any kind of soil.—T. S.

Wintering Mesembryanthemum cordifolium variegatum.—Do you chance to know how this plant should be treated through the winter? I have a large box of it which was perfectly healthy all through the summer and autumn, since it was struck. My gardener put it in the pit in which we winter quantities of plants, and it is the only thing that is dying.—H. S. S. [Although this is all but a hardy plant, it winters best when treated as *Alternantheras* are. Damp is its greatest enemy, consequently the plants should be kept rather dry and in a warm temperature. It is one of the few plants that thrive as well in a stove as in a greenhouse, and there is no fear of its losing its compact character.]

A Large Gladiolus Plantation.—One of the rarest sights of the summer season, in a floral way, says the *American Horticulturist*, is Mr. Allen's *Gladiolus* grounds, 15 acres in extent, in Long Island. One hundred thousand *Gladiolus* bulbs are planted to the acre, and but little knowledge of arithmetic is required to figure out the number of plants growing in this 15-acre plantation. It may well be imagined that the sight of this field of flowers is grand. In passing through it by rail, the sensation is that of entering a fiery lake, for the red and crimson flowers predominate, and the illusion is enhanced as the breeze sways the spikes of flowers to and fro in the form of mimic waves. These brilliant flowers are sent to the New York market daily, 10,000, perhaps, at a time, and are to be seen on every street stand as well as in the more pretentious flower-stores.

BIRDS AND BIRDS' NESTS IN GARDENS.

WHEN the greenery of our deciduous trees, changing to many exquisite hues as it falls, leaves branch and branchlet bare, not only are the graceful interlacings of tree tracery made visible, but, at the same time, other objects of interest and beauty are revealed. The birds' nests, so snugly enconced among the close-tufted bowers of summer foliage, which concealed the whereabouts of the bird-cradles, become conspicuous as late autumn strips the branches bare. Various kinds of nest-architecture are then exposed to curious eyes to study and admire—from the exquisite neatness of the chaffinches' "infant home" to the rough uncouthness of the magpies' unbeautiful, but tough, stick-built cradle—built so high among the upper branches that it needs no mechanical rockers. Many of our daintiest nest-architects are birds of passage, and have now left us till the coming spring; but the greater part of them are native, and are still with us, though their pretty bird-music, their "gentle jargon," as Coleridge called it, is silent—excepting, perhaps, that of the robin and the thrush, who pour forth their resounding notes even while icicles hang from the branches, "and milk comes frozen home in the pail." Birds and their ways, and their songs, and their nests are so interesting that one cannot but wonder at the unthinking barbarism that has made it a business, as well as an amusement, to destroy them. One would think that the beauty of such slight and delicate struc-



Nest of the Reed-bird.

tures as are most of our small bird's nests—which, seeming so fragile, are yet so all-sufficiently strong for their purpose—might have served as an inducement to spare their builders; but it shames us to confess that an Act of Parliament was required to protect the sweet-voiced denizens of our groves and gardens.

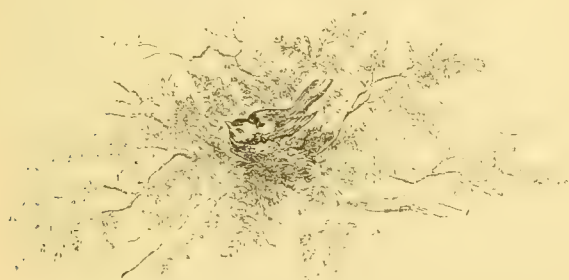
The most unsatisfactory part of the wanton destruction of our small birds is the fact that, so far from being an advantage to the gardener or agriculturist, it has resulted, in almost every case, in injury instead of benefit. Many of our insectivorous birds feed almost exclusively on plant-devouring caterpillars, or on the still more injurious aphids. They also chase the parents of injurious larvæ, moths or beetles, in their flight, and make their prey of these producers of leaf or root-feeding pests; so that, by the destruction of our small birds, we not only deprive ourselves of their delicate music, but also of their services in cleansing our Cauliflowers, Gooseberry-bushes, and other valuable plants from swarms of vermin.

In France, where even the robin-redbreast is killed, cooked, and eaten, the destruction of small birds has been carried to such an extent that miles of country may be traversed without hearing the chirp of a single bird. The destruction of small birds for culinary purposes, at all seasons, is still more extensive in Italy, dishes of *uccellini* (little birds) being esteemed among the chief delicacies of the table; and, among the victims of this gastronomic fancy, a little garden-warbler called the *beccafico*, is more extensively slaughtered than any other, on

account of the very highly esteemed flavour of its flesh. It has been suggested by thoughtful horticulturists that the wholesale destruction of this graceful little creature may have been the cause of such frequent failures in the Fig crops, that the fruit in question is becoming far less generally cultivated in the south of Italy than formerly. In our own island it is a well-known fact that owing to the indiscriminate destruction of birds by the gun of the small farmer and the mistaken and unreflecting gardener, some beautiful species of our feathered tribes have actually become extinct. In gardens where this destructive mania has not been allowed to prevail, the nests, accidentally discovered in spring-time, with their



gem-like eggs, snugly harboured in a softly-woven lining, have often been as pleasing a surprise to a true lover of nature as the opening of the first flower of a newly-imported plant whose bloom is seen for the first time. And, then, the nests of our small birds present such endless varieties of structure and form, such ingenuity in the selection of the most favourable situation, and in securing their safety by means of many cunning devices—some by a curious method of suspension, as represented in our engraving at the commencement of this article; some by being made to resemble a portion of a Moss-grown bank, so closely as to defy detection; and some having an external protection of grey and orange Lichen, so deftly and elegantly attached that it might seem a performance



worked out in sheer love of decorative beauty. And then, too, there is the endless variety of the little groups of fairy-like eggs, flecked and streaked with such fanciful and sweet-toned touches as fascinate even the boy nest-burglar, and blind him to the cruel barbarism he is perpetrating in stealing them. In the delightful garden of a villa in Richmond Park, which I could name, the songs and nest-building of the birds form one of its chief attractions; and what intense pleasure, as we know from his works, was experienced by our enthusiastic naturalist Waterton, in that beautiful island of his, which he had made a veritable birds' paradise! It is gratifying to reflect that our songsters, and birds of beautiful plumage, and even the commonest of our bird tribes, are now protected in breeding-time, by law—thanks to their eloquent defence by such men as Auberon Herbert and other sympathisers with the instincts of these interesting and defenceless creatures.

But in gardens we may, and ought, I think, do more than prevent the destruction of these charmers; we should encourage the harmless and beautiful ones to make their pretty homes in our favourite garden trees and shrubs. The garden might often form a guarded oasis in which our rarer birds might live and increase in happy security, and pour forth their sweet song in return for our hospitality. Gardens would also form the best places wherein to attempt, at first, the naturalisation of the various harmless and hardy song-birds of other lands, which are surely worthy of a home with us.

H. N. H.

SOILS, FERTILISERS, &c.

QUESTIONING THE SOIL.

PROFESSOR JOHNSON, author of "How Crops Feed," is answering questions on the "Chemistry of Horticulture," &c., in the *New York Tribune*; and very interesting and practical his replies are, as, for example, the following:—Will it pay to burn lime (where there is plenty of good stone, and wood that can be furnished at 3 dollars per cord, and labour at the ordinary rate) to put on farming lands, particularly on peat meadows that have been drained and cropped for twenty years? It is impossible to give a positive opinion at this distance. It is highly probable, however, that under the apparently favourable circumstances of the case the use of lime would prove remunerative. The peat meadows, if still abounding in vegetable matter, contain doubtless large quantities of inert nitrogen, which, by the proper use of lime, would be made of immediate avail to crops. In case the soil lacks no other needful element, such as phosphates, sulphates of potash, &c., the application of lime will probably be equivalent to a dressing of animal or ammoniacal manure; but, if the twenty years' cropping has exhausted any of the essential elements of plant-food above-named, the lime cannot supply that deficiency, and the crops will not be materially benefited. One thing will pay; that is, to try on a small scale the effect of lime on the soil or soils in question. In one favourable year the matter would be settled. That is, in fact, the only absolutely certain method of deciding the point. But Mr. Miller feels urgently the need of knowing now. Had he thought of it a year ago, he then could have begun an experiment whose result would now enable him to calculate, not only whether the use of lime would pay, but how much debit or credit a given application would stand him in. But it is not too late. Let him plan a series of trials, and carry them out next summer, and then his neighbours can go to him for advice; and let all the readers of this paragraph reflect on what similar questions they may wish to have answered for them a year hence, and begin now to take time by the forelock. If I were to come into possession of ground with whose history and capacity I was not fully acquainted, I should immediately lay off a number of trial plats for the purpose of ascertaining what the soil might need in order to bring up its fertility to the highest point at the least cost, and what would be the relative effect of all attainable fertilisers, amendments, and means of improving the soil. A square rod of ground, where the soil is uniform, is enough for a single trial, and on a dozen such plats the farmer can sow as many questions, and in due time can reap a harvest of answers. But the questions must be such that the soil can answer, and must be put so that the soil can understand them, and so that the cultivator can understand the answers. If the question be, "Will it pay to burn lime to put on the land?" then we must consider how much lime to use. Since experience shows that lime will sometimes pay when fifty bushels are used per acre, and sometimes when 200 bushels are used, it is well to put these questions as to the effect of 50-100 and 200 bushels; unless, indeed, practice or science is decisive against one or other of these quantities. Since our square rod of ground—a plot of 27 feet long by 10 feet wide—is the 1-160 of an acre, we must ascertain the weight of a bushel of lime in the condition in which we buy or apply it; supposing it to weigh 64 pounds, then 50 bushels would weigh 3,200 pounds and 1-160 of this would be 20 pounds, the quantity our square rod would receive at the rate of 50 bushels per acre. If we make trials at the rate of 100 and 200 bushels per acre it is obvious that 40 and 80 pounds should be weighed off for them. The lime should be slaked with just enough water to make a fine dry powder of it, this should be uniformly mixed with two or three times its bulk of moist but not wet soil, so that the lime will not be dusty, and carefully sowed over the plat and raked in. We suppose that the plat is part of a large field that has been plowed and otherwise tilled in the usual manner for a grain or hoed crop. The lime should be applied some days or weeks, if possible, before seed is sown. The plat should be accurately marked off by slender strips

of board nailed to stakes driven into the ground at the corners and on each side. When harvest comes, the crop on the plat should be gathered separately, and the yield of grain, straw, &c., ascertained by exact weighing. In exactly similar manner a plat sown with gypsum, salt, or any available fertiliser, will tell its own story at the end of the season. In all cases, however, exact comparison must be made between the yield of the manured plats and of one, or if many plats are under trial of two or more unmanured plats of equal size and some with the same quantity of seed. This method of questioning the soil through the plant has been successfully employed to give us a scientific knowledge of what is necessary to vegetable growth, and gives perfectly correct results for practice provided the season is favourable, and the soil has no detrimental physical qualities. As all signs fail in dry weather, such trials give negative results in seasons of excessive meteorological vicissitudes, and they must be properly interpreted. There is another method of ascertaining the needs of a soil which sometimes may be applied with great success, and at other times may fail, viz., chemical analysis. This is not only uncertain but costly, and although its certainty and cheapness have greatly increased within the last ten years, it is not yet to be recommended by the side of the method by practical trial, because the latter is more certain, and the cultivator can apply it himself.

PHOSPHATE SEWAGE WORKS.

A NUMBER of gentlemen, chiefly shareholders, went down the other day to Barking to inspect the works of the Phosphate Sewage Company. For the purpose of demonstrating the utility or otherwise of the process of dealing with town sewage, the Essex Reclamation Company have placed a portion of their estate at the disposal of the proprietors of the patent, who have erected works thereon, and have for some time past been daily dealing with a section of the sewage of London equal in amount to that which would be produced by a town of 25,000 inhabitants. Whatever other advantages or objections may be alleged for or against the process, it cannot be denied the merit of simplicity and of great rapidity of action. The sewage of London, a turbulent mass of thick, black, and odorous water, is pumped out of the mains into a wooden carrier, along which it runs for a few feet till, passing a small pumping-engine, it receives the addition of a small quantity of phosphate of alumina specially prepared. The sewage continues its course along the carrier for some distance, the phosphate meanwhile becoming thoroughly mixed with it, and visibly affecting its appearance in the direction of clarification. It next receives a further addition in the shape of milk of lime, pumped into the carrier from another small pumping station, and then the mixture is permitted to flow into two large tanks, where the process of precipitation takes place, the effluent water running off by carriers to perform its work of irrigation. The Phosphate Sewage Company claims for its peculiar process four cardinal virtues—namely, cheap defecation of town sewage; the production of an effluent water which may be applied direct to the land, and is valuable for irrigation purposes; or, if passed through filter-beds of very limited area, can be so completely purified as to be capable of being discharged into any river or stream without causing a nuisance; the production of a manure sufficiently valuable at least to pay its cost; great economy in original outlay for works, and an avoidance of the necessity for acquiring large and expensive tracts of land in the neighbourhood of populous towns. It is in the second and third of these recommendations that the peculiar advantages of the process are said to rest. The treatment above described effects the preliminary desideratum of precipitating the sewage matter, and whilst the effluent water flows off in a condition in which it is said to retain its fertilising properties, and to be at the same time unobjectionable from a sanitary point of view, there is said to remain a sediment of valuable solid manure. At the Lodge Farm there is a small filter, containing an area of 16 yards, on to which a portion of the effluent water flows, coming out below a bright, sparkling, and perfectly colourless stream, pure alike to smell and taste. Mr. Tanner, the chemical manager of the company's works, explained and illustrated the process for the information of the visitors, who were afterwards conducted round the farm, and under the direction of the chairman (Mr. Peach) saw the works in actual operation.

Soil for Fruits.—The *Gardener's Monthly* gives briefly the following rules for selecting the best soils for the different fruits: "A light dryish soil for the Peach; a strong loamy soil for the Pear; nearly the same for the Plum; a heavy loam for the Apple—if on limestone, all the better; and for the Cherry a soil similar to that for the Peach." To which we may add that we never saw better Peaches than those growing on strong or heavy soils, provided they had a good natural or artificial under drainage and clean cultivation.

AVENUES OF TAPERING TREES.

IN forming avenues, the choice of kinds of trees has hitherto been too limited, and the forms of the adopted kinds too much alike. Nothing can be grander in their way than such noble avenues as those at Windsor or Bushey Park, or such as was so well shown in one of the illustrations of Holland House in last week's GARDEN. The grateful shade and noble tree architecture of old avenues form what is probably the happiest result of the planter's art to be seen in our parks or gardens. We are well accustomed to avenues of rounded-headed trees, very beautiful in many an English park and in public gardens everywhere, but it seems to us that avenues of tapering or fastigate trees are well worthy the attention of planters. We know of few good examples; yet what can be more beautiful and striking than such an avenue as that in the celebrated gardens of the Alhambra, so well shown in our present issue? In cool countries like ours, where there is little need for shade, avenues of tapering trees would be more appropriate than in warmer ones. There is now in our nurseries quite a wealth of trees wherewith to form avenues of this kind—from the tapering Oak, and Plane, and Poplar, to the beautiful and graceful evergreen trees with a fastigate habit, such as the Eastern Cypress, Lawson's Cypress and its varieties, the Virginian Cedar, and other erect-growing Conifers of many species and varieties.

HEALTH FROM FLOWERS.

Our instinct leads us to delight in flowers. Their beauty and perfume have irresistible attractions for us. We have little dreamt that we were thus led to surround ourselves with objects which most powerfully conduce to health. No doubt there are certain members of the vegetable kingdom which are exceedingly deleterious; for, not to speak of the much dreaded Upas, the West Indian Mauchineel, and some species of the American Rhus, there are some of our common sweet-scented flowers, such as the Mezerion, which have very injurious properties. But recent investigation has proved that those adornments of our gardens, for the presence of which we so crave, are, as a rule, endowed with health-preserving qualities. Oxygen, when highly electrified and so rendered specially vitalising, has in recent times been distinguished by the name of ozone. This is one of the chief elements of a healthy atmosphere. Now, centuries ago it was known that certain plants acted as powerful disinfectants. Thus Herodian tells us that, when in the second century the plague raged in Italy, the physicians recommended those who crowded into Rome to go to Laurentum, because there the sweet Bay tree (*Laurus nobilis*) grew in great abundance, and the inhalation of air impregnated with its odours was a strong preservative against infection. And the disciples of Empedocles were wont to grow aromatic and balsamic herbs around their dwellings, from the belief that they were thus guarding themselves against fevers, agues, and such like. Has not too, among us, the tradition of its fever-dispelling power given the name of Feverfew to one of the strongest-scented of the Compositæ? Recent investigations, especially those of Professor Montegazza of Padua, and Dr. Cornelius Fox, have shown that these old ideas were based on scientific truth. It is now ascertained that the quantity of ozone is materially increased by the exposure to the rays of the sun of various plants, among which the most common are the Lavender, Musk, Cherry, Laurel, Clove, Fennel, Narcissus, Heliotrope, Hyacinth, and Mignonette. It is interesting to know that the Sunflower, which will grow almost anywhere, and could be turned to various useful purposes, is one of the most valuable of sanitary agents, since not only is it ozoniparous, but also destroys deleterious miasmata. It should be noted, as a further proof of the good influence of plant-culture on health, that, while the manufacture of ozone is an independent work carried on by the flowers alone, the green leaves are performing their sanitary function by extracting carbonic acid gas from the atmosphere, and helping to preserve that proportion in its elements which makes it healthful. More remarkable perhaps, than all, is the Eucalyptus of which we have recently heard so much, and of which we shall soon know more. Thus the cultivation of flowers is a work not merely delightful and humanising in itself, but one which, in a way most beautiful and picturesque, confers a positive benefit on society so great that it can hardly be overrated, especially in large towns, where there must necessarily be so much to poison and deteriorate the air we breathe. It may be added that the Sunflower thrives even in the heart of London, and that it is readily propagated from seeds sown in March or April. It is nearly allied to the common Jerusalem Artichoke, which also grows in the smokeiest of districts.



AN AVENUE OF TAPERING TREES.

THE GARDENS OF ENGLAND.

THE ROYAL GARDENS, FROGMORE.

THESE are justly regarded as the finest in the country. The walls, which are 12 feet high, enclose an area of 31 acres, and outside of the enclosure is also a considerable tract of ground, on which the rougher kinds of vegetables are grown. The gardens face the south, with a little deviation towards the east, and the multitudinous ranges of forcing houses, which they contain, lie on the north side, and run east and west. To this department, therefore—which is one to which great interest is attached—the following remarks are confined:—

Vines.

The largest compartments of the main ranges are devoted to Grape culture, and some of these Vineries are lean-to's, and others are half-spans. The largest of the former are over 100 feet in length, $16\frac{1}{2}$ feet wide, and $13\frac{1}{2}$ feet high, and are heated by means of three rows of 4-inch pipes in front, and two rows at the back. The Vines are all planted inside, a row being along the back and another along the front, the roots having free communication with outside borders. The half-span-roofed houses are 80 feet in length and 15 feet wide, and, like the others, are planted at front and back, and heated in the same way. Near the top of the back wall is a shelf for Strawberries, and over the pipes in front is a stage on which early French Beans are forced. On the principal range one house is entirely filled with Black Hamburg, another—the second early house—is chiefly filled with the same sort, young Vines being set between them; and also what was once a Pine-stove, in the same range, is now converted into a Vinery and planted with Foster's Seedling, Napoleon, Buckland's Sweetwater, and Muscat of Alexandria. In the other portion of this range, situated on the east of Mr. Jones's residence, is a large compartment known as the late Vinery, and which is now producing an enormous crop of excellent fruit of Calabrian Raisin, Mrs. Pince, Alicante, and Lady Downes; whilst another division contains pot Vines, which are most successfully grown in these gardens. In another portion is what is regarded as an early Vinery, which is now kept in a cool and open condition preparatory to starting. One of the half-span-roofed Vineries is devoted chiefly to Muscats; the Bowood and the Muscat of Alexandria being planted along the front, and quite a variety of sorts at the back. Trebbiano is at present very fine in this house, both as regards bunches and berries; the other kinds, too, exhibit the effects of high cultivation in a marked degree. Another of these large half-span-roofed houses, known as the St. Peter's Vinery, owing to that variety being largely grown in it, now contains a marvellous crop of superb fruit. This Vinery is started in May, and the Grapes are usually ripe in December. The very latest Grapes are obtained from a lean-to house, where the Vines, after they have done fruiting, can be entirely turned outside by means of accommodation provided at the front for that purpose, and the house devoted to Strawberries, French Beans, &c. These Vines can be kept about a fortnight later in starting into growth than those grown naturally in the open air.

Pines.

These are grown in pits about 80 feet in length and 10 feet in width, with 3 feet deep of leaves in them for bottom-heat, and a flow and return of 4-inch hot-water pipes runs round within the walls for the purpose of supplying atmospheric warmth. The plants are invariably planted out in a mixture of good loam; they are set quincunx fashion, about 2 feet or a very little more apart in all directions, and when they are watered they get a thorough drenching, for, unless well attended to in that way, the bottom gets dust dry, and the roots consequently suffer, while the surface presents a moist appearance. There are many pits of the size just named, and all contain Pines in some stage of growth; some are ripening fruit, others are swelling, and others, again, are coming into flower. In some of the pits there is a succession of younger plants and suckers newly separated from the parent plants. Pots are seldom used, for no sooner are the suckers removed from the stocks than they are either inserted temporarily in a pit until room can be found for them in pits permanently, or they are, if convenient,

taken off the stocks and committed to their fruiting-quarters at once. Queens, smooth-leaved Cayennes, and Charlotte Rothschild, are the sorts chiefly grown at Frogmore, and of these a continuous supply every day in the year is kept up; indeed, we have seldom seen Pines in such a flourishing condition as those in question. The plants are strong and stubby with thick succulent leaves, and without a trace of insects. The fruits too, which are uncommonly large, are produced with short thick necks; they are handsome in outline, and are surmounted by very small crowns. One pit, permanently planted out with unrooted suckers on the 1st of May, 1873, is now full of plants showing flower, and in another full-sized pit, in which unrooted suckers of the smooth Cayenne kind were planted on the 15th of November, 1872, the fruits are now almost fully swelled.

Peaches, Plums, &c.

These are now both bare of leaves and fruit, and exposed to the ripening influence of the weather. The houses containing them consist of divisions of the main range, all lean-to's. In one house, mostly filled with young trees, is one thirty years of age and very large, which annually produces heavy crops, while in two other divisions devoted to late Peaches, we were informed that some of the trees had been transplanted, to where they now stand, when in full vigour, and that without injury. Our attention was called to this matter by a large tree that had been transplanted whilst in full leaf about the beginning of last September, and which, owing to being shaded from sunshine by a thick mat, had not suffered even to the extent of losing its leaves. In the case of early shifting under good care the trees form rootlets before winter, and in spring are prepared to start unchecked into growth. Plums are here grown like Peaches, planted out in inside borders, but the roots also have communication with the borders outside, and the branches are trained on a wire trellis immediately under the glass. Plum-forcing is precarious work, requiring a great deal of care and patience, nevertheless, here the trees which are old, have invariably borne heavy crops year after year with unremitting constancy. The varieties thus employed are the Victoria, Green Gage, Jefferson, and Goliath. In one of the houses Plums are grown in front and Guavas on the back wall, on which they thrive well and fruit freely.

Cherries.

Cherry-forcing is carried on in this establishment very extensively and successfully. The trees are plunged out-of-doors every autumn, as soon as it can be safely done after the fruits are gathered, and the two houses devoted to them are used for other crops. These houses are on the span-roofed principle, 50 feet long, 16 feet wide, $10\frac{1}{2}$ feet high in the centre, and have side sashes 4 feet high. One passage may run along the centre of the house and the trees be arranged on either side, or a passage may be made at the two sides and the trees be arranged in the middle, which, if the trees be large, may be the most desirable method. As Cherries grown in pots under glass require all the light possible, only about a foot and half high of masonry is employed in the houses containing them, and that merely as a foundation, and to raise the sashes sufficiently high to permit of them being readily opened or shut, door fashion, *i.e.*, opening simultaneously outwards with their backs to the north-east, so as to exclude cold winds.

Cucumbers.

The Hedsor is the only Cucumber grown in the Royal Gardens, for summer as well as for winter supply, and it answers exceedingly well as an all-the-year-round cropper. A span-roofed Cherry-house has been full of these since the trees were removed, a row being planted on the floor in a mixture of loam and spent Mushroom-dung on each side of the central path. The plants stand about 3 feet apart, and are trained so as to form an archway over the pathway. There are no means of giving bottom-heat to the plants, and the side-pipes have not been used; yet never have we seen Cucumbers look better, or bear a heavier crop than these were doing. The leaves were like those of Rhubarb in size, and the Cucumbers all that could be desired. Now, however, when frost and rain have set in, fire-heat would be indispensable; but, as the plants are about to be displaced to make room for the Cherries, such will not be necessary. This house is succeeded by several other lean-to pits filled with plants for winter bearing. Cucumbers

here are almost invariably planted out in a turfy compost, not too rich; but in one pit we noticed what we imagined to be an excellent plan—viz., a little ridge of soil is laid as for the others; but large inverted bottomless pots are also placed 4 feet apart, filled with soil, and in these the Cucumbers are planted. In this way the roots are better under command than they would be if entirely in the border, and the plants are more elevated towards the light. Some of the outside frames are also devoted to Cucumber growing until about this time of the year, when they are cleared out to make room for Potatoes, Peas, French Beans, Endive, and other early vegetables.

Melons.

These are largely grown in the summer time and a supply of them is obtained with more or less certainty until near Christmas. In April, they come in again. The pits in which they are grown are like those for Cucumbers, and have bottom heat communicated to them by means of hot-water pipes under slate slabs that support the soil. In front, between the bed of soil and the wall, is a trough for the pipes, which are covered with leaves, so that they can be kept damp and strained, thus counteracting aridity in the atmosphere, and obviating attacks from that greatest of Melon pests—the red spider. The Royal Ascot and the Beechwood are the sorts chiefly grown here, and they are now swelling off a fine crop of fruit.

Strawberries.

Of these, 6,500 plants, thoroughly established in 6-inch pots, are now out of doors on a bed of ashes, and, judging by their hard and plump crowns and well-seasoned aspect, they appear well fitted to withstand the forcing to which they will soon be subjected. La Grosse Sucrée and Vicomtesse Hericart de Thury are the two sorts chiefly forced, the former being the greatest favourite of the two. Throughout the Vineries, Peach-houses, and other structures, wherever a shelf can be spared, Strawberries will be set, and even now more extensive accommodation is being made for them, in the shape of new brick pits. A particular point in their cultivation is to obtain the runners early, and to have the plants in an advanced and ripened condition before the approach of winter; the bulk of the plants in question being in their fruiting-pots by the 29th of July.

Asparagus.

Asparagus is forced at Frogmore on an extensive scale. Permanent beds, $7\frac{1}{2}$ feet wide, are formed with alleys between them 1 foot 8 inches wide, excavated to a depth of 4 feet, banked up on either side of the beds with bricks, pigeon-hole fashion, and filled to half their depth with rich soil; in the upper portion are situated two 4-inch hot-water pipes. The chambers containing the pipes are covered with Yorkshire flag-stone, and, while any portion of the beds is being forced, it is covered with span-roofed wooden frames or shutters. Heat is communicated through the pigeon-holes, and can be regulated as required. There are two sets of beds, each set being forced every alternate year. As soon as a supply can be obtained out of doors these beds are uncovered, and the plants in them are allowed to grow until the tops turn yellow, when they are cut down in the ordinary way.

The Plant Houses.

Several houses are devoted to the cultivation of stove and greenhouse plants, Ferns, and Orchids, which are used for the decoration of the interior of Windsor Castle and for supplying cut flowers for bouquets and similar purposes. At the extreme end of the range of fruit-houses is a greenhouse, in which Camellias are planted out in a central border, and many other plants are grown in pots. At the warm end of this house, Bougainvillea glabra is growing up the back wall; its branches form an archway over the passage, and are annually covered with flowers. Habrothamnus elegans and Plumbago capensis also occupy a position on the same wall, on which they grow with a wild luxuriance and flower profusely. At the other end of this range is a compartment, once used as a cool greenhouse, but now converted into a plant-stove. In it Musa Cavendishii is growing freely; also some Tree-Ferns, and moderately large Palms, as well as a fine plant of Pandanus utilis. From its roof is suspended in graceful racemes the red flowery spray of Passiflora racemosa and Bougainvillea glabra, and trained on one of the rafters is a plant of Combretum purpureum, also

beautifully in flower. In one long stove was a row of large plants of Eucharis amazonica, splendidly in flower, growing in 12-inch pots, plunged in a bed of cocoa-nut fibre near the glass. Here were also Dracenas, Crotons, and other plants useful in house decorations. Behind this stove is an Azalea house, where the plants are chiefly grown in the form of little standards, or that of moderately-sized bushes and pyramids. Standing alone is a span-roofed house, in which Poinsettias, Euphorbias, Coleuses, and Gesneras, for winter use, now form the chief occupants, and in one of the main ranges is a long propagating pit. A span-roofed house is devoted to the culture of free-flowering Orchids, such as Cypripediums, Calanthes, Odontoglossums, and other cool-house inmates, as well as to some Ferns and Mosses. In this house Adiantum macrophyllum, in the shape of two-year old plants, formed handsome table ornaments. Besides these there is another house at the back of one of the fruithouses used as an Orchid house or Fernery.

THE KITCHEN GARDEN.

BEANS.

BROAD WINDSOR, Long-pod, early Mazagan, and the whole family of this useful vegetable thrive best on stiff soils, such as clays or heavy loams, but will produce excellent crops if planted early in the season on any kind of soil, trodden or rolled firm. A planting of the Dwarf Green Gem, the early Long-pod, and early Mazagan may be made in October or early in November, in a warm border, or any sheltered situation, in order to stand the winter, and come into bearing in May. Plantings may also be made in December and January in succession. A good season to plant for a full crop is the month of February. Plant such kinds as Long-pod, the Wonderful Minster, Giant Monarch, Dwarf Gem, Windsor, Broad Windsor, Green Long-pod, &c. Keep clean by timely hoeings and surface-stirrings; and pinch out the point of each shoot as soon as they commence flowering, in order that they may set a full crop, and swell freely.

French Beans.

These are fond of well-pulverised, sweet, rich soil. They should not be planted till the middle of April in the open garden (as on account of the damp cold state of the soil they are liable to rot), and then only on warm sheltered borders, or in places where they may be sheltered and protected from the cold wind and morning frost. My own plan to obtain an early, even, and prolific first crop out of doors, was to sow in a frame, or under a hand-glass, or in a box or pan placed indoors, or under shelter; harden off and transplant on a warm border or quarter, well prepared, in trenches or on the flat, with a ridge of earth cast up for shelter on each side, and protect them by night and in cold windy weather with light straw mats, evergreen boughs, Fern, Pea haulm, or any similar materials. This shelters and forwards the crop very considerably. The following have been proved to be good varieties:—Light Dun or Cream-coloured, Mohawk, Dark speckled, Negro, Long-podded, Sion House, Osborne's New, Newington Wonder, Dark Dun, Fulmer's, Robin's Egg, Early White, and Wilmot's Early forcing.

J. B.

BORECOLE.

(BRASSICA OLERACEA FIMBRIATA.)

THERE are now in cultivation many varieties of this useful early winter, spring, and late spring vegetable, in which great improvement has been made of late years, both by introducing some good new varieties and also by crossing and improving the old ones. The old Scotch or Curled varieties, both dwarf and tall, have been so improved by care and selection that the foliage is beautifully curled, close, and of such a lovely green that it has come much into request for garnishing. The variegated Kale, which is of almost every colour, striped and mottled with every intermediate shade from silver-white to deep purple, is also as good for cooking purposes as any of the others. The Buda Kale, when procured true, is about the very best late variety, and the most hardy of all. It is also of a superior flavour and colour when cooked. For a late cold

spring, when vegetables are getting scarce, this variety is most valuable, lasting in fine condition till spring Cabbage is well in season; and, to my mind, its tender shoots, carefully gathered and tied in bunches, like Asparagus, and served at table in the same way, are nearly as good as Asparagus itself. There are also many other well-proved useful varieties, which come into succession from January to May, such as the Siberian, Egyptian, Cottager's, Jerusalem, Thousand-headed, Ragged Jack, Delaware, Scotch Cabbaging or Hearted, &c., all of which may be sown from the middle of March till the beginning of May in three successive sowings, pricking out the plants as fast as they are large enough to handle, and planting them out between Peas or Beans, or at once permanently on quarters, or open ground if it can be spared. Like all other vegetables, if we would have it good and strong, and able to produce fine and abundant heads, it should be planted on good land, that is to say, land that has been well-manured and deeply trenched, and the crop should be always kept clean with an open surface by timely and frequent surface-stirring.

JAMES BARNES.

Blackley's Cure for the Potato Disease.—On Tuesday, the 4th November, I and others visited the garden of Mr. Blackley, at Leyton, to witness the result of an experiment which he had tried for the cure of the Potato blight; and having myself suffered great loss this year from that malady, I naturally felt much interest in the subject. The few sets which were left were completely overgrown with rank weeds; but, to our surprise, there was no appearance of the old enemy. I understand that Mr. Blackley has adopted the same treatment for these last four years with the same results. I sincerely trust that he has found a cure for the Potato disease; and, if he has, we shall owe him something more, I hope, than a debt of gratitude.—W. REYNOLDS.

Hollow Celery.—Allow me to inform your correspondent (see p. 450), that any check which Celery experiences in its growth has a tendency to induce it to become hollow or to bolt, as it is called. Three years ago, when planting out my Celery I ran short of good rotten dung; therefore, for the last row, I used some that was fresh and in a green state. The result was that my Celery was very nearly all hollow and only fit for soup. To grow Celery solid and crisp, and fit for table, it must be kept growing from the time when the seedlings appear until earthing-up takes place. It matters not whether the plants are raised in heat or not, if they are carefully hardened off, so as to receive no check. I say, again, keep the plants growing by a good supply of water and liquid manure, for good Celery cannot be obtained without labour and attention, both of which it will well repay in the end. Your correspondent asks, what is best variety of solid Celery? No doubt there are many that are good, but one that I can recommend, and which I have proved to be excellent, is Sutton's Sulham Prize Pink; it grows to a fair size, is solid and crisp, and of good flavour, and well suited either for private gardens or for market purposes.—M. F., Luton.

— I RAISE my Celery in frames, on a gentle hot-bed; always give plenty of air when the weather is favourable, and gradually harden it off until the plants are ready to prick out. Then I prick them out into cold frames with a good layer of rotten manure under them. I cannot see that raising Celery in a gentle heat has anything to do with making it hollow, or piped; if that was the case, it would affect all sorts alike. I raised the following sorts in a three-light frame:—Leviathan White, Veitch's New Pink, Carter's Incomparable Dwarf Crimson, Williams's Matchless, Sandringham White, and Wright's Grove Red. The two first-named were almost worthless, the two next were not much piped. In the two last I have not seen a piped head out of many thousands of plants; all the sorts were treated alike, and grew side by side on a piece of most excellent land which was an old pasture five years ago, and has grown excellent crops of Potatoes, Broccoli, &c., and, once before, Celery. Therefore it was grown on thoroughly maiden soil, as large pieces of fibry loam turn up quite fresh; yet the manure I use is principally stable-yard, which I apply with a liberal hand. I used no guano this season for Celery. I hope other correspondents will give us their experience in respect to hollow Celery.—W. C., Whitehaven.

— TRY Veitch's Silver White or Haywood's White Queen. The strong-growing sorts of white are, upon the whole, more pithy than the dwarf. Those I name only grow to a moderate size. The very best reds are Major Clarke's Solid Red, Dickson's Superlative, and Leicester Red. These are all varieties of first-rate flavour, and always solid.—G. WESTLAND.

GARDENERS IN AMERICA.

I QUITE agree with the remarks on this subject by my friend Mr. Meehan, in your paper of November 1, so far as regards the wages question, and also that the purchasing value of money in this country is much less than in England, even although, as *Punch* remarks, "everything has ris" in England, where bread has to be imported from this country, and beef is at starvation prices, so that in the matter of eating the difference is small, considering that working people here live much better, or, at least, more extravagantly than in England, if we except the English colliers. I need not inform English gardeners that there are at all times more men requiring places than situations vacant, which is the principal cause of low wages in that country; for, like everything else, the price is regulated by the supply and demand. Under these circumstances, a gardener must accept the wages offered or turn his attention to other employment, a very difficult thing to do in a small country like England, where every other occupation has plenty of hands educated to that particular business. In this country it is different. If one business does not pay, another is at once tried, and, if a man is a good workman, no one questions him if he was brought up to that business or not. For myself, I always received the wages I asked in England, and, if I could not obtain more here than there at my present occupation, I should at once turn my attention to something else. Of course, no one with common sense would go to Canada to settle as a gardener, to be frozen during six months of the year, and roasted the other six. I am aware private gardeners, as a rule, are paid low in this country, when compared with the skilled workman. There are several reasons for this; there are here no old families, with money and estates handed down in succession for centuries. Here the money is generally made, property purchased, houses built, and gardens made by the present proprietor. Everything is done with a reference to that single proprietor, or probably as a speculation, or it often happens that, as soon as the place is in working order, the proprietor grows tired of it, or makes an unfortunate speculation, and it passes to strangers. Another reason is, that Patrick and Fritz get tired of the "old country" and Fatherland, and try their fortunes here in large numbers every year. In the old country many of them have been garden labourers, but on landing in this free and enlightened country they at once expand into full-blown gardeners and professors. Of course they undertake to do any and everything, at a comparatively low wage; and, if they chance to recollect the names of several most noted gardens in England or on the continent, they will give a good list of those places, in each of which they have held a responsible position. Brother Jonathan, knowing little about gardeners or gardening, and having no time to inquire, at once secures the services of the fresh arrival, which are usually of so unsatisfactory a character that the employer seldom obtains any gratification for a large outlay in money and time, and often sells off his plants in disgust. Active young men, brought up to work under good pushing gardeners, who can handle a spade or any other tool if required (that is, if that class of young men has not died out, or developed into kid-gloved dandies), are the men who are wanted in this country. As an example, I would not keep a man long who was not worth two dollars a day, and for such men there is always a demand here, particularly from February to April. Such men are more likely to leave their old-country prejudices behind, and enter into the customs of this country than older men, and would be willing to take any job which offers for a time until something more satisfactory presented itself. I will mention a case in point. A well-educated young man came over here from one of the best English gardens; he and a companion from the same place on landing engaged at once to a farmer, and worked as farm hands during the summer. In the fall they found there would be no work during winter, and wrote to me. I obtained a job for one at good wages in Philadelphia, and he is still there. The other worked with myself for three years; I then sent him as foreman in a commercial establishment in Philadelphia, where he receives 1,000 dollars a year. Another young man, who had among other things worked in a London market-garden, on arrival here, I set on to lead a gang trenching ground, at which, as well as at inside work, he was a good hand. He wanted a milder climate than this, and I obtained him a place as foreman in a nursery at San Francisco at 60 dollars a month in gold, and he had received a good rise twice in the first six months. Another, who took a small place on landing, called on me at the end of a year, and I at once sent him to a place in Kentucky at 50 dollars a month, with board and lodging. These are only mentioned as examples to show that well-conducted men who know their business can get a fair remuneration here, and, if they are saving of money, can soon lay by a few dollars and start business for themselves. In England, it is usually a long time before a man is able to do this.

New Jersey, U.S.A.

J. T.

THE INDOOR GARDEN.

NEW CHINESE PRIMULAS.

THE group of beautiful Primulas shown by the Messrs. Brown, of Hendon, at the last meeting at South Kensington, has again drawn attention to the great value of the *Primula sinensis* as a winter-blooming plant. I do not think that this particular feature of its character, is, even now, after many years of cultivation in this country, sufficiently appreciated. Growers, especially gardeners, sow their seed of it too late; they either save their own seed, and have thus to wait until July before it is ripened, or they purposely sow late, thinking that about March is the proper season of blooming. If seed be sown in April or May, and rapidly grown on, the plants will commence to bloom in November, and carry large heads

of flower all the winter through; a dozen or two of them making any house look gay in the dullest period of the year. I have to take exception to the conditions appended to the class for twelve Primulas to be shown at South Kensington on the 18th of March next year. The schedule says "not fewer than four kinds," but surely the compilers of it could scarcely be aware that there is now such great variety in the Primula that twelve plants "all distinct," ought to be asked for at least. I bloomed last spring twenty distinct forms, and, with semi-doubles, all of which came true from seed, and other single forms that I had not, at least ten other varieties might have been added. The Messrs. Brown's two new forms, *picturata* and *cærulea*, afford evidences of the rapid increase in distinct forms that Primula is assuming. The richly-coloured form called *exquisita* I have seen equalled in years past, although I think Messrs. Brown's flowers possessed a richer shade of crimson, while those I have seen elsewhere exhibited deep hues of purple. When it is remembered that the

flowers of the Chinese Primula have fifteen or sixteen diverse shades or markings, and that nearly all of these are also borne on the Fern-like foliage, it will be readily understood that a collection of twelve kinds ought not to be a matter of difficulty to any regular exhibitor. I have been informed on reliable authority that a blue-flowered kind, or one pretending to that colour, has been already heard of on the Continent, and, if that is the case, it might possibly prove to have been the progenitor of the new Primula *cærulea*. It must not be overlooked that the nearest approach to a blue hitherto has been found in *Lilacina albo-marginata* (a very pleasing form that might be best described as lavender edged with white). This kind also produces foliage and stems exactly alike in habit and colour to those of *P. sinensis alba*. I found *cærulea* also to possess the same characteristics, but the leaf-stalks were darker,

and partaking somewhat of the hue of the flowers. *Lilacina albo-marginata* is of Continental origin, although now pretty common with us; and I think *cærulea* has been bred from it. One of the finest of the white kinds is Paul's Waltham White, the blooms being pure, of great size, and nicely fringed. Tompkin's Princess Louise is also a massive white flower, slightly shaded with rose, and of good substance, but rather smooth-edged; the Marquis of Lorne being a purple-flowered duplicate of it. If any enthusiastic amateur is in want of a new sensation, let him go in for the possession of as large a collection of Chinese Primulas as he can secure.

A. D.

TRICHOPILOIA SUAVIS.

THIS beautiful plant is a native of Central America—a rich field

from which many of our most valuable Orchids have been derived. It is one of the commonest species in cultivation, and may be purchased for a few shillings; it flowers very profusely in March and April, and is of extremely easy culture. There are several varieties of this plant in cultivation, varying in the size of the flowers, and in the depth or brightness of the rosy blotches with which its snow-white lip is profusely adorned. The flowers are borne, two or three together, on a short drooping scape; and, in large well-grown specimens, their effect is very beautiful, as they frequently form a perfect wreath all round the base of the pseudo-bulbs. Good specimens often bear upwards of a hundred flowers, and, as they last a considerable time (often six weeks) in perfection, they are of additional interest. The flowers are very useful for cuttings, either for dinner-table decorations or for the drawing-room vase, as they sparkle very brilliantly under artificial light, and look very fresh and attractive when neatly backed by foliage or Fern fronds.

This plant, together with

its allies, grows well in a compost of fibrous peat and sphagnum, care being taken to elevate it on a little hillock above the rim of the pot, or rather pan, in which it should be grown. All the *Trichopilias* do best in an intermediate house. They require plenty of water when growing, and a decided season of rest.

F. W. B.



Trichopilia suavis (half natural size.)

Caladium esculentum in Algeria.—M. Charles Rivière is reported to have recently discovered *Caladium esculentum* (*Colocasia esculenta*) growing wild in Algeria in a district remote from all cultivation and human dwellings. The leaves which he forwarded to Paris were shown to M. Brongniart, who, thinking it unlikely that a Sandwich Island plant should be found indigenous in North Africa, suggested that it is probably a variety of the *Colocasia antiquorum* of the Egyptians. The leaves of the plant discovered by M. Rivière, however, bear a greater resemblance to those of *C. esculenta* at present growing at Paris than to those of the specimens labelled *C. antiquorum* in the gardens of la Muette.

THE AMATEUR'S GARDEN.*

HOW TO GROW COOL ORCHIDS.

Most people are apt to think that Orchid-growing is both difficult and expensive; but my own experience convinces me that nothing can be more simple, while the cost has been, in my own case, much less than I had anticipated. I would recommend everyone who has convenience to grow the cool or mountain Orchids. I find there are two distinct classes of amateurs who affect Orchid culture, viz., the class who really love the plants for their sweetness and beauty, and those who grow them on account of their rarity and value. The latter strive mainly to possess rare plants, of which there are only a limited number in the country, and willingly pay high prices for them; while the former grow only the most beautiful, and think that the cheaper they can be obtained, and the more they are growing, the better. To this class I belong. I commenced Orchid-growing three years ago, in a little lean-to Fernery, on the north side of a high brick wall, and the house being naturally humid, my first pair of plants—*Odontoglossum cordatum* and *O. Bictonense*—grew and flowered so vigorously, that I was induced to add plants from time to time, until my little collection now numbers upwards of fifty species, and occupies the whole of the front shelf, the back of the house being formed of rock-work and planted with half-hardy exotic Ferns. I use no fire-heat during the summer months, and the temperature rarely exceeds 55° during winter, except by means of sun-heat, while it frequently descends as low as 40° on sharp frosty nights. In potting, I am in favour of small pots, well drained, and the compost I use is fibrous peat, coarse sand, and about one-fifth of living Sphagnum. As my house is naturally humid, the Moss grows freely on the pot tops, and not only gives them a neat and clean appearance, but also keeps the roots of the plants moist, whilst, at the same time, it keeps the compost clear of slimy confervoid growth, to which wet peat is generally subject. I find that my plants require a liberal supply of water at the root nearly all the year round. The following is a list of the species which I have now in flower, viz.:—*Oncidium cucullatum*, *O. Phalaenopsis*, *O. crispum*, and *O. cheiroporum*; *Odontoglossum Bictonense*, *O. grande*, *O. Alexandræ* (two varieties), and *O. Lindleyanum*; *Lælia autumnalis*, *L. albida*, and *L. fufuracea*; *Zygopetalum Mackayi* (two plants); *Cypripedium villosum* (fourteen flowers), *C. insigne*, and *C. barbatum*.

Whalley Range, Manchester.

J.

THE ROSE GARDEN.

December.

As the true sportsman cares for the comforts and attends to the condition of his horses and hounds, not only in the season when they are specially wanted for his amusement, but always, and even takes an occasional peep at his guns, silent during the summer months (for the true sportsman is no murderer of doves) in their green baize beds; so the true Rosarian never forgets nor neglects his Rose trees. Now, in December, you will find his standards, if recently planted, or in an exposed position, neatly and securely tied to their stakes, and such summer shoots as have made an excessive growth, say from 3 to 5 feet, shortened to 12 or 18 inches, that the wind may have less power upon the tree. Around their stems, and around his dwarfs also, there is a liberal stratum of manure. Monsieur Etienne Levet likes an overcoat in winter, Charles Lefebvre a pair of worsted stockings, Madame Lacharme her sealskin, and Countess of Oxford her foot warmer, quite as much as you do; and that fragile little novelty, and that delicate Tea, must have respirators, if they are to live until spring. We have had this year an unusually long and genial season for planting Rose trees and stocks, and it is to be hoped that Rosarians have successfully completed that operation; if not, they must take the first open weather, and run the risk of frost-bites, laying-in, &c. In stormy weather, when nothing can be done out of doors,

* This department is written exclusively by amateurs distinguished for skill in various branches of gardening.

tallies may be cut from spare pieces of deal, wired, and smeared with white paint, lists may be made of Roses in stock, cards written for exhibition, the show boxes repaired and painted, if necessary; and careful study may be frequently bestowed upon "A Book about Roses: How to Grow and Show Them," by S. REYNOLDS HOLE.

THE HOUSEHOLD.

APPLES FOR FOOD.

APPLES are abundant, large, and fair this season, and we hope that they will enter largely into our food during the winter and spring, and will afford a healthful and cheap diet to the people. Fruit is not a luxury, a luscious condiment, to be indulged in only by the rich, but the desire for it is implanted in our nature. At present, Apples are principally used in the form of puddings, pies, tarts, and sauce, and are also eaten raw, in which state they are more wholesome than when mingled with butter, eggs, and flour. But they are very delicious when simply baked, and served at every meal; and substituted for pickles and such condiments, they would surely be found beneficial. Sweet baked Apples are a most desirable addition at the breakfast and tea table, and are far more healthful, appropriate, and sustaining than half the dishes usually esteemed essential as such times. Served with milk and bread, they make the best diet that young children can partake of. Baked Apples, without meat, are far more substantial food than Potatoes can possibly be made, and to us the delicious aroma and flavour are always most appetising. It will be found that less flour, eggs, sugar, and butter will be consumed in a family when a supply of Apples is in the store-room. There are dozens of recipes for preparing Apples for the table, but almost all of them require the addition of butter, eggs, &c., but to us either baking, boiling, or steaming them, makes the most palatable dishes. Our family favourite is prepared thus:—Wipe the Apples perfectly clean, dipping them first into boiling water; then with a "corer" remove all the seeds and stem by punching it through the Apple. Place the fruit in a deep baking dish, put a tablespoonful of white sugar into the middle of each Apple; pour upon them a teacup of boiling water with three tablespoonfuls of sugar dissolved in it. Bake in a slow oven until quite soft, taking care not to burn the skins. Take out into a dish and serve with cream; milk will do also. The Apples can also be pared, cored, and sweetened, and placed in a deep dish on the upper part of the stove; a large teacup of boiling-water poured over them, and a plate laid over the dish. Boil them until soft, and there is no trouble about removing the skins when eating them. The ingenious housewife can invent ways of cooking Apples; if the skilful French cooks have discovered 365 ways of cooking an egg, surely our inventive brains can discover 200 ways of cooking Apples. For those who like such things free from sugar, cream, &c., and those who are forbidden the use of such delicacies, a really good cooking Apple, such as the Blenheim Orange, stewed in the oven and mixed with plain boiled Rice, forms a simple delicious dish which all the art and all the aids of the best cookery cannot surpass.

RECIPES.

Oranges.—*Orange Sponge*: Dissolve an ounce of isinglass in a pint of boiling water, strain it, and let it stand till nearly cold; then mix with it the juice of six or seven Oranges, and of one Lemon; add the whites of three eggs and sugar to taste, and whisk the whole together until it looks white and like a sponge. Put it into a mould, and turn it out the next day.—*Orange jelly à la Russe*: Put an ounce of isinglass into a pint of cold water and boil it until reduced to half-a-pint; strain it, and add the juice of one Lemon, one Seville Orange, and of fifteen China oranges. Sweeten it to your taste, and whisk it all together until almost cold; dip a mould into cold water, put in the mixture, and set it by for use. Before turning it out put the mould into warm water, then turn it out on a dish, and serve ornamented with flowers, or in any way you please.—*Orange Cream*: Time, ten or twelve minutes. One ounce of isinglass, quarter of a pound of loaf sugar, one Lemon, seven Oranges, and half-a-pint of cream. Squeeze and strain the juice from the Oranges and the Lemon,

put it into a saucepan with the isinglass, and sufficient water to make a pint and a half, with the Orange and Lemon juice included. Rub some sugar over the Orange and Lemon peel, add it to the other ingredients, and boil all together for about ten or twelve minutes; then strain it through a muslin bag, let it stand until cold, and beat it up with the cream. Dip the mould in cold water (or oil it), pour in the cream, and put it in a very cold place to set, or in ice, if you have it.—*Oranges for Dessert*: Strip off the peel from a sufficient number of Oranges to fill a dish, and take off part of the white skin, being careful not to break through to the Orange; pound a quarter of a pound of loaf sugar, lay it in a dish, and pour over it as much cochineal as will make it a bright colour; dry it before the fire, and then roll the Oranges about in the sugar until they are well covered with it. Serve in a glass dish.

Asparagus.—Asparagus, although generally eaten hot with melted butter, or cold with the sauce recommended for Artichokes, may be cooked in a variety of agreeable ways.—*Ragoût de pointes d'asperges*: Blanch the Asparagus and cut off the tops. Put these into a stewpan with some veal stock, stew on a slow fire until the sauce is properly reduced, then add butter rolled in flour, and stir till smooth. The juice of a Lemon will give piquancy to this dish.—*Asparagus fried*: Cut away the hard part and blanch the remainder in water and salt. Put the Asparagus heads in cold water, as this preserves their colour. Take them out of the cold water, flour them, and tie up in little bundles of six or seven, dip these in beaten egg and fry.

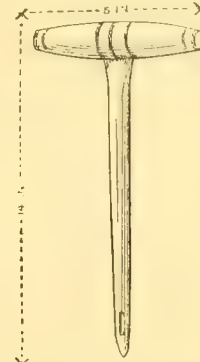
Artichokes.—Although Englishmen are sound upon the great subject of beef, they have much to learn concerning vegetables; and it affords matter of complaint to foreigners that we insular folk have no idea of doing anything with a vegetable beyond boiling it in plain water. The "Grand Dictionnaire" contains no less than sixteen recipes for cooking Artichokes. The simplest way of disposing of this vegetable is to secure it in a young state and eat it with the following sauce:—Crush the yolk of an egg in a sauceboat, and moisten it with a spoonful of vinegar, pepper, salt, and salad herbs finely chopped, or a Shallot also finely chopped; add two spoonfuls of oil, mix to the proper thickness, and serve.—*Stuffed Artichokes*: Half-cook them in water, then stuff them with meat, Parsley, and Chives. Finish cooking them, and serve with herbs, oil, and Lemon juice.—*Artichokes à l'Italienne*: Cut three Artichokes into six pieces of equal size, take out the "hay," pare down the leaves and wash them; put them in a stewpan with a little butter, season with Lemon juice, a glass of white wine, and half a glass of stock. When done, drain them, set them on a dish, and serve with a white Italian sauce poured over them.—*Artichokes à la Provençale*: Trim some Artichokes all over; cook them in water till the "hay" comes away easily, and put them on a baking dish with oil, cloves of Garlic, salt and pepper. Cook them upon hot embers, with a good fire over. When they are cooked remove the cloves of Garlic, and serve dry—excepting the juice of a Lemon.

Haricot Beans.—*A la Maître d'Hotel*: Put a large piece of butter into a saucepan, and when melted put in the Beans (ready boiled and well drained) with pepper and salt to taste, some minced Parsley, and the juice of a Lemon.—*A la Poulette*: Proceed as above, but add to the Lemon juice the yolks of a couple of eggs; beat them together and strain them; then at the time of serving add this to the Beans off the fire.—*Aut Tomates*: Toss the Beans (ready boiled and strained) in a saucepan, with plenty of well-flavoured Tomato sauce.—*Au Lard*: Cut some bacon into small dice, put it into a saucepan, toss it on the fire, and after a few minutes add the Beans (ready boiled); put in salt and pepper to taste, give them a turn or two, and serve.—*A la Lyonnaise*: Mince an Onion, and fry it in plenty of butter to a straw colour; throw in the Beans (ready boiled) with pepper and salt to taste; toss them a short time, and serve.—*En Salade*: Drain the Beans thoroughly, and dress them (hot or cold) with a mixture of three parts of olive oil and one of Tarragon vinegar, pepper, and salt to taste, and some Tarragon and Chervil or Parsley finely minced. Rubbing the dish with Garlic is an improvement.—*To Boil Haricot Beans*: Soak them in cold water for at least twelve hours, then put them into a saucepan with plenty of fresh cold water, an Onion stuck with Cloves, and a bundle of sweet herbs, and set them to boil; do not put in any salt until the Beans are almost done, and during the process of cooking put in at intervals half a tumblerful of cold water.—*Haricot Bean Soup à la Paysanne*: Boil some Beans as above; when half done drain off the water, and re-place it by a lesser quantity of fresh hot water, put in a head or two of Celery cut into small pieces, a couple of cloves of Garlic, and one or two Chillies, pepper and salt to taste, and a gill of Olive oil. Let the soup boil till both Beans and Celery are thoroughly done, then turn it out on small slices of toast, and after the lapse of a few minutes serve.

TOOLS, IMPLEMENTS, &c.

A USEFUL PACKING-NEEDLE.

THE little implement, of which the accompanying is an illustration, is commonly used in Covent Garden Market and by many nurserymen, when fastening up baskets or hampers. It is far more effective than the old-fashioned packing-needle, inasmuch as the operator has greater power over the tool than he would ever have over the old-fashioned needle. It consists, as will be seen, of a flat piece of wrought-iron or steel, inserted in a wooden handle, and is exceedingly convenient not only for lacing wicker-baskets, but also for opening small boxes of fruit or flowers. It can be made on



Packing Needle.

the shortest notice by any blacksmith, and the manner in which it is used will be readily suggested by a glance at the sketch. The handle may also be made of iron or cast-steel if desired, and made to serve as a hammer.

B.

Potato Diggers.—A trial of these was recently made at Boothferry, near Howden, under the auspices of the Royal Agricultural Society. Classes were provided for ploughs and diggers, and a plot of between thirty and forty acres of Potatoes afforded ample opportunities for thoroughly testing the merits of implements entered for competition. In the class for the plough, only three implements competed, these being two ploughs manufactured by Messrs. Corbett & Peele, of Shrewsbury, the prices of which were £7 and £8 respectively; and Hanson's patent Potato digger, manufactured by Messrs. Coleman & Morton, of Chelmsford, the price of which is £17. The plough exhibited by the first-mentioned firm has a single mould-board and a revolving disc composed of a series of tires, which by a simple attachment is fixed to the handles of the plough. It works just behind the mould-board and tears the furrow to pieces as it is turned over by the plough, and the Potatoes are deposited on the surface of the soil. The revolving disc can, we understand, be attached to an ordinary plough at a cost of about £3. The higher-priced plough from the same firm has a double mould-board and two revolving discs, but the work did not appear to be quite so satisfactory, and the judges awarded the prize to the £7 implement. The implement exhibited by Messrs. Coleman & Morton also did its work well, although scattering the Potatoes rather more than is desirable. No awards were made in the class for diggers, as none of the implements appeared thoroughly satisfactory to the judges.

The Garden Pot Filter.—May I ask you to kindly give publicity to the following simple filter exhibited in the Bethnal-green Museum, and called "The Poor Man's Filter." It consists of a common garden flower-pot, of some 9-inch diameter and 10-inch depth. The drainage hole is stopped (not too tightly) with a piece of clean sponge. A layer of about 2 inches of animal charcoal is first placed in the pot, then a second layer of clean sand, upon which a layer of 3 inches of clean coarse gravel is placed. The pot can be set over an earthen jar, into which an abundant supply of pure water will filter for all drinking purposes.—RICHARD SHEWARD, in *Echo*.

Test for Sewage in Water.—At a recent meeting of the Royal Dublin Society, Dr. Reynolds called attention to Heisch's test for detecting sewage contamination. It is one of the best known, but has been strangely neglected. About half a pint of the water to be examined should be placed in a colourless glass-stoppered bottle, and a few grains of the best loaf sugar added. The bottle should then be placed in a position where it will be directly exposed to the rays of the sun. The liquid should not become turbid even on a week or ten days' exposure. If there is a perceptible cloudiness, sewage contamination may be strongly suspected. Frankland has stated that this turbidity is due to phosphoric acid present in sewage, and it has also been suggested that it is due to Fungoid growths.

THE FRUIT GARDEN.

THE CHERRY PLUM.

(PRUNUS MYROBALANA.)

WITH such a pretty homely name, one would be justified in supposing this a common plant, whereas it is not by any means so, though it deserves universal cultivation, for two reasons. First, it is the earliest of ornamental-flowering trees. Before a single tree in the orchard or garden shows a flower it is a snowy mass, looking as conspicuous in its lonely beauty as a white-sailed clipper on a dark sea. I visited the Chiswick Gardens once on the 8th of February, and, from the small entrance to the avenue leading to Chiswick House, was charmed to see, amidst the clouds of dark branches dripping with cold rains and rattling with the last gusts of a fierce gale, a snowy mass of beauty, about 30 feet high and 30 feet in diameter. It stood amidst uninviting and formal-looking deciduous trees, and it required some stretch of the imagination to fully understand what a beautiful object could be made of it in pleasure grounds, particularly in the south.

With rich evergreens for surroundings, or with a Cedar in the background, and such things as the Deodars and Cupressus macrocarpa to the right and left, its effect would, of course, be improved immensely, not to speak of many other combinations. The flowers are sweet-scented, a little more than three-quarters of an inch across, white, with a brush of yellow stamens in the centre, and produced abundantly all over the tree. Secondly, its fruit is edible, and it is worthy of cultivation for that alone. On this point, Mr. Barron, the superintendent of the Chiswick Garden, says:—"When at Burghley Park Gardens, Stamford, in July, a few years ago, I observed several good-sized trees of this pretty little Plum, quite heavily laden with fruit. I was informed that it was very much used by the Marquis of Exeter's family, when quite ripe, for the dessert, but principally for tarts, for which purpose it was greatly esteemed and

more relished than the Morello Cherry, which it somewhat resembles. The fruit is also used for bottling, and for preserving like other Plums and Cherries. From one tree the stock had been increased to ten or twelve, and by the Marquis of Exeter's desire many had been distributed amongst his tenants, so much are its qualities estimated in that district. Through its habit of early flowering, however, we generally lose the fruit by frosts, excepting in unusually open seasons, and in some favoured situations, as at Burghley, which is high and dry. The tree is of slender growth, but attains a great size—from 30 to 40 feet; the leaves are very small and rounded; fruit medium-sized, of a slightly oval shape; its colour pale red, with a long slender stalk like a Cherry. Indeed, when gathered, a dish of them more nearly resembles one of red Cherries than of Plums. The flesh is yellowish, sweet, with a slight acidity, and juicy. Ripe early in July, but will hang on the trees a long time. At Arundel Castle I recollect seeing some ripe fruit of it on a small plant in the beginning of March; this tree flowered in October. It was there called Roblet; but it has many synonyms, as Early

Scarlet, Miser Plum, Virginian Cherry, &c." Enough has been said, we trust, to show that it ought to be made as common in our gardens and pleasure grounds as the red Hawthorn. If in some low situations it fails to set its fruit, its early bloom will please, even if the cold rains whiten with it the winter-beaten Grass. W.

REMARKABLE BUNCH OF GRAPES.

WE have much pleasure (says *The Gardener*, to which we are indebted for the annexed illustration) in being able to give a representation of the very remarkable bunch of Black Hamburgh Grapes which Mr. Hunter, gardener to the Earl of Durham, at Lambton Castle, exhibited at the Manchester International Exhibition last September. It may be considered the most extraordinary bunch of Grapes, for size, that has been produced in this country, not excepting Speechly's 20 lb. Syrian, and those immense Syrians of more recent date produced at the Edinburgh and Glasgow Internationals. We learn from Mr. Hunter that this bunch is the

product of a Vine struck from an eye in 1869. The Vine was cropped the second year and carried six bunches, one of which was among those with which Mr. H. competed successfully at Glasgow last year. This year the Vine bore seven bunches besides the subject of our illustration, which weighed 13 lb. 4 oz., the lightest of the eight being over 4 lb. Our illustration is taken from a photograph, and is an exact representation of the remarkable bunch.



The Lambton Castle Bunch of Black Hamburgh Grapes.

The Souvenir du Congres Pear.—Mr. Barry, of the great firm of Ellwanger & Barry, thus alludes to this Pear in the *Agriculturist*:—"This variety, as its name implies, was dedicated to the Pomological Congress of France by its originator, M. Morel. It was submitted to public examination for the first time at the Universal Exposition in Paris in 1867, and received a first premium. At the Pomological Convention, lately held in Boston, it was shown in the collection of

Ellwanger & Barry, and on account of its size, beauty, and fine quality, attracted considerable attention. The tree is an upright pyramidal grower, vigorous, and very productive. The fruit grows sometimes singly, but generally in clusters of two and three from the same bud, and hangs firmly to the tree when exposed to influences which cause other varieties to drop. The specimens are larger than Williams' or Clapp's Favourite, to which they bear a strong resemblance. The skin is smooth, bright yellow when the fruit is fully matured, with the parts exposed to the sun brilliant red or carmine. The flesh, while it is very like that of the Williams', has a less defined musky flavour, and it is firm to the core. Its season of ripening commences about the first of August, before the Bartlett, and extends into September. As a large, showy, very early new Pear of fine quality it ranks number one.

The Bergamotte Poiteau Pear.—In a recent number of the *Revue Horticole*, M. Carrière announces that scions of this excellent Pear, which has been very undeservedly neglected, will be forwarded, on application either to the Director, or to the Professor of Culture at the Gardens of the Muséum, Paris. M. Carrière speaks of this Pear in terms of high commendation. The fruit is small, but of fine quality, and abundantly produced.

MOVEMENTS IN FLOWERS.

ON reading over the last numbers of the *Revue Scientifique*, which contain some most interesting papers on comparative physiology,* one is drawn to the conclusion that able botanists are quite as prone as simple horticulturists and amateurs to seek the (as yet undefined) causes of certain phenomena in plants among those forces which bring about more or less similar effects in animals. Taking, for instance, those wonderful phenomena, the movements in flowers,† one might be tempted to liken these researches to those of a person trying to elucidate, by reference to the complicated machinery of a Crampton engine, the governing cause of motion in that very primitive locomotive—a kettle on wheels driven by a jet of steam impinging on the air behind it. The organism of an animal is only the natural arrangement of certain parts that transmit, combine, or transform those great primary forces or laws of nature which govern all matter, whether organised or not. To these secondary or transmitted and combined forces, particular names are given, such as "nervous power," "muscular action," &c., denoting that they proceed from the nervous and muscular systems. Wherever these systems are found wanting, it is reasonable to imagine that the power or force they give rise to is wanting also, and it would seem just as useless to try to explain the recurring of a stamen or of a pistil, by reference to what takes place in an animal, as to peer into cranks, valves, pistons, or air chambers for an explanation of the *modus operandi* of the kettle carriage. If the effects of the brain and nervous system conceiving and transmitting the will, and of the muscular system executing it, are among the most wonderful instances in nature of the great primary forces transformed and combined; on the other hand, the direct effect of these same primary laws on inert matter is hardly less to be admired. Granite riven by a few inches of freezing water, heat that applied in one part of the globe will produce hurricanes at a distance, or regular monsoons and trade winds; capillarity, which, by means of a little water applied to a rope, will raise the Obelisk of Luxor, are effects sufficiently important to encourage one in seeking among these agents the cause of a slight movement in a slender vegetable filament. By "direct," one does not, however, mean literally direct application, for in the examples above given, as well as in that of an Oak riven by lightning, there exists transmission and combination, one force eliciting one or more others. It is the sap, converted into steam, that splits the tree, by the instantaneous expansion of its particles, and not the electric fluid. Besides, although gravitation, molecular attraction, heat, electricity, light, capillarity, endosmose, and magnetism contribute generally only under combined or secondary forms towards all the phenomena of animal life, yet it is pretty well proved that endosmose, and perhaps some others, are the direct agents of certain functions in the animal economy.

Wonderful as are the movements in plants, when taken separately, in their aggregate they actually amaze and confound us by their endless variety. Sometimes the pistil recurves to receive the pollen from the anther; at other times it is the stamen that bends over to apply it. Sometimes the corolla closes to provide for impregnation otherwise impossible. Some flowers only open at night, others open in the day; some turn away from the light, others always face and follow the sun. Some stamina shrink on the slightest touch, at other times it is the leaf-stalk and leaflets that bend when touched. Now, no one having as yet defined a system—i.e., a natural arrangement of parts—in the plant, so combining the primary laws as to produce a force capable of effecting all these motions, the deduction naturally will be, that if we are ever to find out the causes we must grapple with particular movements separately, and trace upwards to the primary laws that possibly can bring them about. The field is a wide one, the possibilities are endless, and there is no lack of able investigators to sift them. As a haphazard guess with regard to the motion of a stamen, might not heat be disengaged from near the ovary (as it notably is in some Caladiums), at the moment of anthesis, and might not this slight heat, impinging on one side only of the stamen, cause it to curl over as a board or a piece of paper does when heated on one side? And, as regards the motion of the petals of *Calendula pluvialis*, that fold up when rain is coming on, may not their tissue be capillary, and capillarity be the cause of their bending, just as it is the cause of the little monk putting on his hood in a toy hygrometer. Regarding the movements of the sexes in plants, we find that impregnation as often takes place, independently of these, by means of insects and the wind, as by direct contact of anther and stigma; and, in natural history, a rule, to hold good, should afford examples in far greater proportions than do the exceptions. Most writers, after enumerating the numerous similarities in effects produced in both kingdoms, and laying a good deal of stress on the fact of the intermediary beings between both kingdoms,

have generally said all they can, in their point of view, and would sum up as one of the authors referred to, by some such truism as this:—"Both anatomy and physiology, therefore, forbid our assigning boundaries to organised kingdoms." Of course this is quite true, and not only this, but we are also obliged to acknowledge that, organised or not, all beings form the links of a circular and endless chain, where, it is quite impossible to say, here ends one kingdom and there begins another. It is also pretty well established that the extreme links of each kingdom are occupied by inferior, obscure, and generally microscopic beings, with ill-defined position. Witness the very *Navicella*, quoted by the same author, which, though classed by De Candolle and Dujardin among plants of the Algae tribe, are placed by Ehrenberg among animals of the Infusoria class. There is, however, this fact, that must not be lost sight of: although the three kingdoms blend at their extremities, yet, according as beings ascend in the scale of excellence peculiar to their kingdom, they differ more and more from beings of another kingdom, and perfection in any being depends in fact upon its having the least of the characteristics of the other kingdoms. It is therefore useless to look for animalism among the higher order of plants. We must seek it among beings, wonderful in their way, like all that comes from the Creator's hands, but inferior as regards the excellence typical of a particular kingdom. Man, the Oak, and the Diamond, kings of their respective domains, radiate as from a centre, and the summits of the three pyramids which they occupy are distinct and far apart, however blended and interwoven they may be at their bases.

FREDERICK PALMER.

Versailles.

A WESTMINSTER FLOWER SHOW.

THE passion for flowers is born equally with citizen and peasant. It is pretty and picturesque to watch the country children gather wantonly and cast aside these "stars that in earth's firmament do shine;" but it is affecting to see those of the town tend and treasure their one flower—their *Picciola*—with enduring love. The child bred in a London back-slum rejoices more in the weak blossom he has nourished than in the jewels studding the garments of a Persian Shah. And no wonder; for the diamond, however priceless, is but a clear cold gem, while the flower lives and grows. And this pure taste is not lost with childhood. Men and women happily preserve it, and its nurture tends to elevate a soul, however debased, and to raise it to the God who created the flower. The encouragement of window-gardening helps to cherish this heaven-born instinct, and the annual flower-show in the college garden at Westminster proves what such encouragement can effect. Perhaps a brief description of it may stimulate to the support of similar institutions elsewhere. We thread the long cool cloisters of Westminster School, wandering now right, now left, until we find ourselves in the college garden. This is, in some sort, a close, in part surrounded by the grey dormitories the scholars and the red dwellings of Church dignitaries or scholastic masters. These are, however, half hidden by trees or covered by climbing plants, so that at intervals nothing but the reposeful green of nature is visible. Birds are singing, as if domesticated in the trees, and unconscious that without roll, in unceasing measure, the heavy wheels of the din of Westminster; or that above, solemnly surveying the scene, rise sublime the grey grand towers of its Abbey and the high clock tower of its Houses of Parliament. While the grounds are yet comparatively empty, we survey the tent. Here is a long array of flowers, tier above tier, brought from streets, courts, and alleys of which we have not before heard, from windows, possibly ill-glazed, and rooms probably ill-ventilated. Yet "clean" is the expression we hear everywhere. The flowers are clean. This is high praise. There is no symptom of soot, smoke, or grime on leaf or blossom. They have been so carefully nurtured that the close dark atmosphere has not harmed them. Like children simply fed and persistently washed, they have flourished on daily watering and tending. Here is a wealth of well-trained Fuchsias, Geraniums (single and double), Sweet Williams, Balsams, Calceolarias, Hydrangeas, Nasturtiums, Musk, Carnations—all clean. Here are many specimens of a trailing plant with small bright yellow blossoms, which, we are told, has many names—Creeping Jennies and Roving Sailors are two of them. This flower seems indigenous to London windows, bravely surmounting all atmospheric influences, and looking cheerful in spite of soot or bad air. Here is one small fairy Rose. There may be others, but we see only this. What a treasure the tiny gem must be to some toiling and tasteful cultivator! Although "clean" is an appropriate word of praise for these window flowers, they deserve others: for they look strong, healthy, and well-trained, and many are large of growth and rich in blossom. All show a meritorious attempt to reach perfection. Round each pot is a paper, on which is inscribed the name and address of the owner, in writing of various styles; from the care-

* "Cours de Physiologie de Claude Bernard au Musée d'histoire Naturelle."

† "Cours de Botanique de G. Carlet à la faculté de Sciences de Grenoble."

fully-formed characters of the artizan, to the straggling letters of the child. The prizes seem more numerous than the blanks; for the cards announcing them show everywhere amongst the flowers. Not only are the united parishes of St. Stephen and St. John, Westminster, represented, but others, external to the society. One portion of the tent is reserved for "the sick and weary of a hospital," and we pause to call up the wan faces and trembling hands that have watched and touched the flowers, and the sufferers who have been for awhile allured from pain "to win the secret of a weed's plain heart." The tent and grounds fill by degrees. The society is supported by the shilling entrance tickets of the rich and the penny fees of the poor. The former have the precedence, and rank and fashion arrive to shed the halo of costly dress, beauty, light, and colour on the antique college garden. Amongst them are some turbaned orientals, one of whom is accompanied by a lady in a rich drapery of gold and scarlet tissue, arranged in Eastern fashion. This appears to be a large fringed scarf, thrown across the black hair, and wound gracefully round the body. The Asiatics are, apparently, not strangers, but converse easily with many of the company, and seem much interested in all that passes. We hear the word "Archbishop," and turn to recognise the Archbishop of Canterbury. Dean Stanley has been present from the first; so have other abbey celebrities—for the success of the poor depends on the aid and countenance of the rich. Meanwhile, the band of the A division of police performs, with precision and animation, operatic airs, quadrilles, galops, and vales. A concourse of men, women, and children, suddenly fill up the outskirts of the grounds, and we become more and more animated. These are the inhabitants of Westminster, admitted annually *ad libitum*, to the "cool sequestered" shades of its college garden. We see them gazing—not enviously we hope—at the gorgeous dresses of the ladies, and at the humbler flowers of their compeers. There is a murmur of "Did you see the Earl?" We did not see him, but with the selfishness of egotism, succeed in securing places near the temporary rostrum where he is to be. Our example is soon followed, and the crowd thickens around. Piles of bright books appear—and these are soon followed by the Earl of Shaftesbury, ever foremost in works for the good of his fellow creatures. The distribution of prizes begins at once. Lord Shaftesbury stands in his open-air pulpit, while a gentleman on his right calls out, "Half-a-crown and a handsome book for the best *Geranium*," together with the name and address of the winner. This formula continues, with certain variations, throughout the proceedings, and is followed by the appearance of the successful competitors from amongst the outer crowd of the lower million. Each mounts, successively, the platform on the right, passes before Lord Shaftesbury, receives the prize, moves on to the left, descends, and again vanishes into the mass. It would be as impossible to overrate the interest of this simple ceremony as to enumerate or describe the prize-holders. Here are feeble old men and women, brawny artizans, mothers with infants in their arms, and children of all ages, as happy at receiving the reward for the tender cherishing of a flower, as would be many a warrior at being endowed with an Order of Merit, after a victory. It is pleasant to see the faces of the aged kindle into light as Lord Shaftesbury shakes their hands cordially; pleasant to see the lined brows of the workers relax at his kindly words and touch; pleasant to watch the smiles of the young as he pats them on the head and cheek. The prize is received without demonstration, but the accompanying brotherly love meets with instant response. Sympathy is sweeter than a dole. Here are children so small that they are lifted to the pulpit, and stand face to face with the earl. He presses their cheeks in his hands and hopes they are going to be good. Their confidential look of assent is more telling than promises. One or two cripples are helped up the steps by some dignitary on one side, and down by Dean Stanley, seated on the mimic stage, on the other. How kindly the ministering policemen and bystanders hand them through the crowd! After all there is more softness than hardness in the human heart. When the numberless books and small sums of money are distributed, and the gratified recipients have retired, the customary addresses and votes of thanks follow. Now the rear ranks press into the van, and class really mingles with class. We see the richly and the poorly clad together, all eagerly listening for the words that fall from the lips of the speakers. It is difficult to catch them, however, for the crowds of children are making such a hullabaloo with their games and dances, that they are well nigh lost except to the few close at hand. They are to the purpose, and not "long drawn out," which is more than can be said of all speeches. Lord Shaftesbury has just said in his address, that whereas he was formerly called upon to preside at numbers of similar gatherings, he has this year been present only at two. Judging from this of Westminster, we should be inclined to lament with his lordship over any falling-off in so interesting and refining a pursuit as the cultivation of God's loveliest gift to man—flowers. The day has been one of sunshine and blue

sky; no clouds, no showers. Just as the cool of evening floats in, the garden is rapidly shorn of its hot-house plants. As if by magic, the many-hued ladies disappear to the carriages that block up Dean's yard, and are replaced by the more sombre crowd. As the light of the one fades, we wander into the shade of the other. The college garden is abandoned to the working classes of Westminster, who roam in and out of the tent, walk or sit about, and enjoy themselves; at least, we hope they enjoy themselves, for there is a subdued, careworn, toil-lined expression on most of the faces, when in repose, scarcely suggestive of enjoyment. If, however, noise is proof of happiness, the children, at least, are happy. Their mirth fills the air, and they roll and race about on the green sward as briskly as if they were used to it. Here and there, nevertheless, are little faces troubled by disappointment. Their owners are tenderly embracing a flower-pot, and gazing dejectedly at a plant. On inquiring we hear "I have tried three years, and I thought to have a prize. I have watered it night and morning!" We give the best advice we can: "Try again! You will be more fortunate next year." A bright smile replaces the dejection, and sudden hope banishes despondency. They promise to "try again," and are happy once more. As the prizes have, we think, outnumbered the blanks in this "eighth annual flower show," we venture to believe that it has been a source of innocent pleasure to most, or not to all, who have thronged the college garden to-day.—*Argosy*.

WORK FOR THE WEEK.

HARDY FRUIT GARDEN.

HARDY fruit-trees of all kinds should be planted as early in the month as possible, and avoid burying frozen lumps of earth about the roots of the trees. Where there are vacancies on walls to fill up, they can be made good at any time, however wet the weather is; for, dry turfy soil can be procured for the roots, and sufficient drainage given by means of concreting the sub-soil. Where wall-trees are not looking well, and are unproductive, the roots are generally at fault; the trees should, therefore, be lifted and replanted. Nailing should be pushed on while the weather is mild, for severe weather may come and hinder such operations. If not done in October and November, the pruning of fruit-trees should likewise be carried on with vigour. In neglected orchards this is an operation of great importance; as the trees get so crowded with wood and spurs, that good crops are few and far between. Were orchard-trees carefully pruned every year, and the fruit thinned, where too thickly set, failing crops would seldom be seen, and the fruit would be large and fine. Thin out the branches of old trees, and cut down useless ones. In some orchards, old Apple and Pear trees are much neglected, and allowed to be covered with Moss and Lichens. Such trees, after pruning out the superfluous branches, would be greatly improved by scraping the Moss off, and then washing the stems and branches with a mixture of quicklime and soot, which can be put on with a syringe or garden-engine. American blight on fruit-trees may be stamped out, in the winter time, by scrubbing every branch on which it exists with a hard brush, then painting the places over with soft-soap. The system of growing single and double cordons of Apples and Pears on the bottoms of walls and trellises will be found of great utility, and a source of enjoyment to the cultivator. They are not recommended to take the place of pyramids or bush fruits in the borders, but only to fill up bare places on the bottoms of walls where nothing else is grown, and as edgings to the sides of walks, where they interfere with no other crop in the borders. Calville Blanc Reinette du Canada, Reinette Grise, Herefordshire Pearmain, Ménagère (a large French Apple), Belle Dubois (another very large French Apple, like Warner's King), Calville St. Sauveur, Belle Josephine, and some other kinds of Apples, all on the French Paradise stock, and the finest French Pears do well as cordons when the fruit is thinned out, so as to leave only a dozen or two on each tree, according to the size of the sort. These little trees, being grown on the bottom of south or west walls, do not suffer much when in blossom from spring frosts, being sheltered by the foliage above them. Single and double cordons, however, planted as edgings in the border, are more exposed; but they can be easily protected from spring frosts by means of a few Fir branches or light straw hurdles. When these cordon trees are planted in December, a covering of litter over the roots will keep the winter's frost out, and keep the roots moist in dry springs. If old trees are intended to be re-grafted, head them back to the place where it is intended to insert the fresh grafts. Figs on walls will want protection from severe frosts in winter; but, if the branches are tied together, and straw or mats wrapped round them, or a thin thatch of Broom interwoven in rope-yarn laid across stakes is placed in front of them, they will be quite safe. Where dried Fern can be had, it likewise makes a safe covering by

thatching the trees with it. Gooseberries, Currants, and Raspberries may be still planted; and, at this late period, it is better to mulch the roots afterwards. To assist in getting rid of Gooseberry caterpillars on established bushes infested by them, scrape away all the earth from the base of the bushes, and dig it into the middle of the rows. The space denuded round the bushes, if filled up with old tan or fresh soil, will contain no larvæ or young caterpillars to crawl up the stems and commence their ravages in the summer. Strawberry-beds are often top-dressed in December with litter, to protect them from severe frosts; but this operation should be deferred till the spring. When the beds are top-dressed, then, with some rather strawy litter, just before the spring-growth commences, the foliage and fruit-stalks grow through it, and the fruit is kept clean from heavy rains; besides, the litter keeps the roots of the plants moist in hot dry summers. The nailing of wall-trees should now progress as fast as possible in open weather; for it is cold work in the dead of winter, and in spring many other operations occur which cannot be deferred. The nails should only be driven in sufficiently to hold, and never into the bricks to injure them; for it is foolish work spoiling good walls with nails, when wiring them would answer every purpose; and all new walls should be wired. The fruit stored in the fruit-room will frequently want looking over, and all should be picked out that show the slightest symptoms of decay. The temperature should be kept rather low, and as equable as possible; and all damp and frosts expelled by artificial heat. All Vines artificially forced are liable to much injury by severe frosts in the winter, if left in the open air. They should, therefore, be protected till they are taken into the forcing-houses.

INDOOR FRUIT GARDEN.

Cherries.—Introduce these into some very light and airy structure, provided there is not a house expressly for Cherries, and keep it close at first, so as to induce a night temperature of 45° and a rise of 10° by day, but ventilate freely to maintain this stage. The plants are benefited by plunging the pots in a bed of leaves that will yield a heat of about 45°.

Figs.—This is a good time to shift any plants in pots or tubs that want that attention, using turfy loam, and if of a calcareous nature all the better. Top-dress old plants that have been grown for several years in pots, and water with manure-water. A few of the established plants may be put into a Vinery at work to force, or into a Pine-stove to produce a few dishes of early fruit. Should it be practicable to form a ridge of fermenting material on the floor of any of the fruit-houses for starting the Figs in, they would well repay the attention, in starting away more kindly and certainly than they otherwise would do. Endeavour to maintain an atmospheric temperature of 50°, and a bottom-heat of 75°, gradually raising the former as the plants advance. Syringe the Fig-trees every fine day.

Peaches.—All trees in pots wanting a shift should now receive attention. Those which were potted last year will only require a top-dressing of good turfy loamy soil, mixed with a few crushed bones, or well-rotted manure. If the loam is rather stiff, some burnt ashes, chalk, or old lime-rubbish added will give it porosity and increase its fertility. When top-dressing, take as much of the old soil off the top of the pot as possible, and make the new soil as firm as the old ball. If the house is unheated, protect the roots from severe frosts by placing the pots in groups and covering them with litter or mats. An early house may now be started, giving it a very mild temperature at the beginning, so as not to have the blossoming period occurring before the sun has some influence in setting the fruit. From 40° to 50° is a safe range to commence with, and plenty of air should be given on all favourable occasions. For very early Peaches and Nectarines, a dozen or two of trees, grown in pots and forced in pits or low houses with a mild bottom-heat, will produce some nice fruit in April or May. When these are in blossom, distribute with a feather in order to assist in setting the fruit. Syringe the trees twice a day with water of the same temperature as that of the atmosphere of the house until the flowers begin to open. The trees in the late succession-houses will now want pruning, dressing, and tying to the trellises. A solution of Gishurst compound, consisting of about five ounces to a gallon of boiling water will, if put on when cold, by syringing the trees, be an effectual cure for insects. Peach-trees trained on walls will likewise be much benefited by the same application, if put on with a powerful syringe or engine. When there is reason to fear that the borders inside or out are exhausted, some fresh turfy loam may be given to the roots, by opening a trench, carefully lifting their extremities, and planting them in the fresh soil after removing the old. Protect the outside borders with litter or dried Fern, and, if some wooden shutters or tarpauling are placed on the top, the roots will be kept quite safe from severe frosts or chilling snows.

Pines.—Fruit-swelling plants require a genial temperature of from 65° to 70°. Water must be given moderately, judiciously, and only to such plants as require it at the root, for a kindly atmospheric humidity goes far to answer their requirements during these short days, when we have not sufficient sun to evaporate it and dry the atmosphere. Such plants as have finished swelling, and are about to colour, should be lifted out from amongst the plants that are still swelling their fruit, and should be placed on a dry shelf or light end of the house, and allowed to colour in the best light at command. Water should be entirely withheld while the fruits are colouring, or they are liable to get diseased inside. Even ripe Pine-apples, placed under unfavourable circumstances, are apt to get discoloured and flavourless. Those that are coming into bloom, and such as are showing fruit, require particular attention as regards the application of water and humidity, or they may produce abortive pips or swell unevenly. Those started into fruit will require, for the next six weeks, great patience, care, and perseverance, in order to induce them to swell and perfect it for early spring use. For succession-plants in every stage, maintain a regular and kindly atmosphere, and a temperature of about 60°, but not too much humidity. Little water need be applied during the short dark days, especially where fermenting material only is employed for heating. Pot on both succession-plants and suckers as required.

Strawberries.—Long before this time, these should be snugly stored in their winter quarters, either in frames or built into the sides of ridges of coal-ashes with overlapping stone flags, broad slates, or boards to throw off the wet. The main object in taking such care of the pot plants consists in preserving their crowns from frost and cold rains, which are much more injurious to these plants than to those in the open ground, and often render them abortive or "blind." Introduce a few of the most promising of them into a Peach-house just started for producing fruit in late March and April. A frame, with a good depth of leaves for bottom-heat, is an excellent place for starting Strawberries in. The temperature at first should be kept moderate and somewhat low, and in the humid atmosphere which the leaves afford, the plants start away much more kindly than they do in structures heated by hot water. Keens' Seedling is still one of the best for early forcing, and President and Sir J. Paxton are good successional sorts. Eclipse is another excellent kind for forcing; its flavour is good, and it carries well. For late forcing, Lucas, a first-rate Belgian sort, Rev. Mr. Radclyffe, and British Queen, are useful varieties.

Vines.—Great care should be exercised as regards the temperature of the Vineries now started, which should not range higher than from 50° to 60°. When the Vines have fairly broken their buds, the temperature may be increased from 60° at night to 70° in the daytime, when there is sunshine. Vines in pots, if started in the beginning of the month in a mild bottom-heat, will furnish ripe Grapes early in May; and, as late Grapes in bottles can be kept in good condition till then, with a certain number of structures, a succession of Grapes can be had all the year round. Do not force the Vines too hurriedly, however, while the days are so short, cold, and sunless; but have all in good order to go ahead as the weather becomes brighter. Prune and dress the Vines in succession-houses as soon as the Grapes are all cut, and see that the outside borders are sufficiently protected from frost. Grapes in late Vineries will require frequent looking over, in order to pick out any decaying berries, as they induce damp, which affects the others.

Cucumbers.—All overbearing should be at present discouraged, in order to allow the plants to make healthy foliage and shoots, and if some weak manure-water is applied to the roots, with a top-dressing of fresh turfy soil, the growths will be induced to come stronger than they otherwise would be. Avoid hard forcing in cold dull weather, and rather than employ too much fire-heat, cover over the sashes at night with mats or straw. Should thrips or red spider put in an appearance, syringe the foliage once or twice a week in the daytime with soot-water. This will keep these pests in check, as well as act as an excellent stimulant to the roots. In Cucumber houses or pits, in which the bottom-heat is supplied by hot-water pipes, great caution will be required to see that the soil does not get too dry for the bottom roots. Should this be the case, holes must be made in places in the bed and water poured into them to moisten the sub-soil. Always use tepid water, either for syringing or applying to the roots.

MARKET GARDENS.

Prune and thin Raspberry bushes. These are commonly grown in lines 4 or 6 feet apart and 18 inches plant from plant. From three to six of the best shoots are left to each stool, and they are cut back to about 3½ feet in height. During the summer they are not staked

but a ligature of matting or of rope-yarn is tied around them near their tops. Prune in Red Currant bushes pretty hard; if under fruit-trees, leave only about six branches to each plant. Gooseberry bushes may likewise be pruned, an operation for which time cannot be spared in spring. Remove old Moss-covered and unfruitful bushes and replace them with young and fruitful ones. Bushes raised from cuttings layered last spring should be lifted and transplanted, either permanently or in lines 18 inches apart. Save the best of the prunings for cuttings, which tie into bundles, and insert in the earth, to be planted out singly when ground is prepared for them. Brussels Sprouts are still excellent, as are also late-sprouting Broccoli, but as soon as they yield their crop clear them away and trench the ground they occupy. Make use of Cabbage plants, if any yet remain, between the rows of fruit bushes. Stir the ground between Red Cabbages that were planted $3\frac{1}{2}$ and 4 feet apart after late Potato crops, with two lines of common Cabbages between them, in order to encourage growth. Cauliflowers, where pricked out in frames, under hand-lights, and in sheltered open air borders last month, now only require to have the sashes and lights tilted up in fine weather and kept close in the event of frost. Transplant Parsley from early autumn sowings in shady spots, in lines 8 inches apart; also Onions in lines from 6 to 8 inches apart in open beds. Radish-beds, 4 and some 5 feet wide, may now be made, sown, and covered with 3 inches thick of rough litter. Where Asparagus ridges have not been levelled, that operation should be done whenever the weather is dry, and some well-decayed manure may be placed over the roots of select plants of the same, placing some soil over the manure to keep it in place. Dust lime over Lettuces and Endive to preserve them from slugs. Fresh beds of Rhubarb and Seakale may be made for forcing. Seakale for coming in naturally in spring should be earthed up, and some rough litter placed around Globe Artichokes to protect them from frost. Mushrooms are bearing remarkably well this season, on account of the dry and frosty weather, for nothing is more prejudicial to them than continuous cold rains. Hard frost may be counteracted in its effects by additional covering on the beds, but there is scarcely any means that would not be too expensive, that would effectually exclude wet.

THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

WOULD you be good enough to print the following note which I have received from a namesake, though no relation, at Leeds? It may have the effect of causing his excellent suggestion to be acted upon in other parts of the country:—

3, Hillary Place, Leeds, Dec. 8, 1873.

Sir,—As one who would be glad to see a purely horticultural society, worthy of England, formed in London, I shall be happy to become a subscriber to your proposed scheme, and to canvass others in this neighbourhood to join it. I think, if local committees were formed, there would be no difficulty in getting a sufficient number of persons to join, who, though they might not, on account of their distance from London, be able personally to attend the meetings of the society, would be glad to assist in establishing a real central society of horticulture. May I suggest, therefore, if the movement goes forward, the formation of local committees to canvass for subscribers?—Yours faithfully,

G. F. Wilson, Esq.

(Signed) THOMAS WILSON.

Mr. Thomas Wilson, when sanctioning the printing of this note, added:—"I take in THE GARDEN, and other horticultural papers, and it was from letters and leading articles in them that I became aware of what was in agitation for the formation of a real horticultural society. I cannot think that, if the attention of the public is called to the question, there can be any difficulty in finding 5,000 or 6,000 subscribers of a guinea each to support a society, whose sole object shall be the promotion of horticulture in all its branches." A lady fellow thus writes to me:—"I feel it is a disgrace that wealthy England, full of people priding themselves on their parks, arboreta, and gardens, with acres of glass, cannot support a Royal Horticultural Society, and nobly. I myself know several such people who do not belong to it; and, when I have expressed surprise, they say that they do not care for it, and are, in fact, quite indifferent about the matter." Let us hope that we may add many lady subscribers to the renovated society, for the garden is their province. I believe the reason why "wealthy England" does not join the Royal Horticultural Society is, that it looks upon it as a part of South Kensington, and not as a horticultural society representing the whole nation. It was most encouraging to read, in your number of to-day (No. 108), a great authority like Mr. Harpur Crewe so cordially backing up Mr. Ellacombe and Mr. Elwes' previous letters. I have only to add that competent horticulturists in London are engaged in the work of reconstruction, and that, in proportion to the degree in

which the country continues to make its voice heard, will their task be easy or difficult. I shall be happy, for the present, to receive communications, and to see that any likely suggestions are considered by the proper authorities; but, having already much correspondence, and as any answer to it must probably be in print, it will be understood that any communication may be printed unless the contrary is stated.

GEORGE F. WILSON.

ROLLED PLATE GLASS.

To trace effects to their causes is surely the business of gardeners more than that of most men, but in the case of rolled plate some of your correspondents seem content to jump to conclusions upon mere hearsay evidence. Mr. Newton, of Newark, has sent you some Vine leaves from Vineries which I built for him in the autumn of 1872. These are such as to demand commendation, and yet, strange as it may seem, Mr. Baines some time back, I think at the Birmingham meeting, said that he never saw a Vine leaf larger than his hand under rough plate in his experience. Well, what men see and what they do not see would make a long history, but as I happen to have practical experience of more than twenty years with rolled plate, I do not feel disposed to yield to the opinion of either theorists or gardeners. I use and recommend rolled plate for three reasons, first, because I believe it to be the best; secondly, because I know it to be five degrees warmer than ordinary sheet, an object in these days of dear fuel; and thirdly, because it is cheaper than glass which scorches. In fact, so satisfied am I of the perfect adaptability of rolled plate to all cultural purposes that I have entered into an arrangement with Messrs. Hartley and Co. to make tinted rolled plate for me, by the use of which I purpose banishing shades from Orchid-houses and Ferneries, and, at the same time, by an artistic blending of colour, produce a much handsomer roof than has yet been attempted. To get out of the antiquated extravagances of paint and putty has been my object so far, and to be clear of the "old rut" altogether is still my ambition. To these remarks it is scarcely necessary to add anything in answer to the strictures of Mr. Max Leichtlin (see p. 482). As a botanical collector he, no doubt, knows more of plants in their native habitats than under culture; and I will venture to say there are very few of my practical friends who would place plants in a comparative well, "not near the glass," and when, in November, Fungus sprung up among them would attribute it to rough plate glass. This is simply a case of bad gardening.

WILLIAM P. AYRES.

Cowan's Lime-kiln Heating.—I trust that my silence respecting Mr. Cowan's admirable system of heating has not prevented any one from adopting it. I determined, before speaking of its merits, to thoroughly test it in every way; and I trust that my judgment in this case will prove as correct as the award of the judges (of whom I was one) did concerning the "gold-medal boiler" at Birmingham, which has given entire satisfaction, and proved worthy of its name. The success of Mr. Cowan's heating apparatus at Hatfield is complete; it is working most satisfactorily, and in that respect has even exceeded my expectations. Should it continue to work in the manner it now does, it will prove a great boon to us here, and inaugurate quite a new era in the heating of horticultural buildings generally. For every barrowful of coals thrown into the kiln we have a substantial return; while, by the old system, the only return was ashes and the trouble of clearing them away. Though our chalk is inferior in quality to some which I have seen in the neighbourhood, we nevertheless have plenty of heat.—EDWARD BENNETT, *gardener to the Marquis of Salisbury, Hatfield, Herts.*

— We have also a letter addressed to Mr. Cowan by Mr. J. Garnier, gardener to Mitchell Henry, Esq., M.P., Kylemore Castle, in which (after stating, among other matters, that about 5,000 feet of 4-inch piping, in the extensive glass department at Kylemore, is thoroughly well heated by one of Cowan's kilns of the following dimensions:—13 feet 6 inches in depth, 6 feet 6 inches at its greatest width, and 3 feet 6 inches at the top) Mr. Garnier says, "I draw ten barrels of lime each day (3,650 barrels per year), and, as it is of superior quality (being made from imported limestone), it is worth in this neighbourhood 2s. 6d. per barrel (£456 per year). Against this stands the cost of the stone and anthracite coal (about £300 per year), leaving a balance of £156 in favour of your compensating system." This statement is most encouraging to those who are hesitating to adopt Mr. Cowan's system from doubt as to its compensating character, since, at Kylemore, where the limestone has to be imported, it not only pays for the heating of an extensive range of houses, but, in addition, brings in a clear profit of £150 per annum.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

THE ZONAL PELARGONIUM.

By PETER GRIEVE, Culford Gardens.

IN taking a retrospective glance at the improvement which has, within the last few years, been effected in the several families of hardy and half-hardy decorative plants, we shall find that very successful results have been achieved with such genera as the Rose, the Hollyhock, the Dahlia, the Pansy, the Fuchsia, and the Verbena. But, in no instance is this onward movement more marked than in the case of the Pelargoniums, or Geraniums as they are erroneously called, and more particularly as regards the Zonal or Horse-shoe varieties. Pelargonium zonale and Pelargonium inquinans appear to have been introduced into this country from the Cape of Good Hope about the year 1710, and it is from these two species, and probably that of Fothergillii, that the numerous varieties of our modern Zonal and Nosegay Pelargoniums are descended, consisting as they do of varieties with variegated as well as green foliage, and with double as well as with single flowers. Mr. Loudon, in the second edition of the "Hortus Britannicus," published in 1830, enumerates 237 species of the genus Pelargonium, together with 262 garden varieties, and he mentions the facility with which hybrid varieties are produced among them. No variety, however intermediate between zonale or inquinans and any of the garden varieties alluded to, has ever, as far as I know, been produced, although some of the latter sorts show some indications of a zone, or rather a dark mark or spot, in the centre of the leaf. Still there exists no reason, I think, to suppose that this has been induced by any cross from the zonal section; nor is the great improvement which has recently taken place among the zonal varieties, to be ascribed in any degree to the influence of the sorts alluded to. As before stated, they may, in all probability, be considered to have all descended from the three species already named, and, until within the last thirty years, it appears that but few varieties of these species had been produced. Philip Miller was curator of the Chelsea Gardens from 1722 to 1768, and during that period he appeared to have secured a variety of *P. zonale* either from seed or from a sport, having silver-variegated or margined foliage. This appears to have been the first variegated Pelargonium, and was long known as Miller's Variegated. A golden-margined variety, of whose origin nothing appears to be known, but which is supposed to have been a sport from *P. inquinans*, has existed for at least fifty years under the name of Golden Chain, and another silver-variegated variety, with narrow-petalled pink-flowers, which may have originated at a later period than Golden Chain, and is probably a sport from *P. Fothergillii*, was, and is still known as Mangles's Variegated, and is still found to be a useful plant for out-door decoration. Previous to the year 1847 or 1848, the variety known as Golden Chain, was comparatively but little known, but about that time, the late Mr. Beaton began to use it for the purpose of open-air decoration, and, with such telling effect, that the plant soon became exceedingly popular, and in great request. While Mr. Beaton was thus rendering famous the delightful gardens of Shrubland Park, near Ipswich, he was at the same time diligently engaged in successful experiments, with a view to the improvement of the various tribes of half-hardy decorative plants, more particularly the Zonal and Nosegay Pelargoniums, the flowers of which, as well as their habit of growth, &c., he certainly succeeded in improving to a very remarkable degree. Upon the death of Mr. Beaton, his seedlings fell into the hands of Mr. William Paul (upon whom his mantle would also appear to have fallen), and who has long been celebrated as a most successful improver of the Pelargonium, as well as of many other tribes of ornamental plants, fruits, &c. Previous to the year 1848, the few variegated Pelargoniums in existence, were sorts with narrow-petalled flowers, of little merit. But about this time Mr. Kinghorn succeeded in raising a seedling, with fine variegated foliage, and possessed of broad-petalled scarlet flowers. This variety was justly considered a great acquisition,

and was introduced to the public by Messrs. Lee, of Hammer-smith, under the name of Flower of the Day. This was soon followed by other improved varieties, from the same raiser, some of which having zoned foliage with white margins, were the first to merit the term of Tricolor. By this time other raisers were in the field, and valuable variegated varieties were originated by Mr. Lennox, Mr. Elphinstone, and others. These, together with Tom Thumb, Cerise Unique, Punch, Lady Middleton, and many improved nosegay varieties, placed an abundant supply of vastly improved material at the command of the decorator of the parterre, the greenhouse, and the conservatory. But the onward march of improvement was not destined to halt here, nor has it even yet slackened its speed in any degree. Soon after the introduction of the improved silver-variegated varieties, a raiser and admirer of these plants, after many efforts, succeeded in originating a new, distinct, and beautiful race of plants, which are now known as Golden Tricolor, or Golden-variegated Zonal Pelargoniums. And when, during the year 1855, the first fully-developed variety of these plants, in the form of the now well-known Mrs. Pollock was introduced; the horticultural world admitted itself to be agreeably astonished, and since those days much further improvement has been effected in this beautiful class of plants. Soon after the advent of the Golden Tricolor varieties, another distinct race of ornamental-foliaged Pelargoniums made its appearance, owing its origin, in common with the Golden Tricolor race, to a blending of the species zonale and inquinans, being descended from the old Golden Chain, and some zonal variety. This race of ornamental-foliaged plants is known as the bronze Zonals, or gold and bronze Zonals. Several raisers took great interest in the production of these latter varieties, amongst the most successful of whom appear to have been Mr. Wills, Messrs. Downie, Laird, & Laing, &c., and whilst such raisers as Morris, Carter, Windebank, Sheppard, Smith, Henderson, Thorpe, Turner, Watson, Gill, and Grieve, &c., were rapidly improving the tricolor-foliaged varieties, other raisers and growers, including Messrs. Paul, Pearson, Groom, Denny, Lemoine, Sisley, &c., were equally successful in the advancement of sorts remarkable for their quality of bloom, having reference to colour as well as to form or shape of flower. A due regard as to the latter indispensable quality caused many raisers to altogether discard the nosegay section, notwithstanding its desirable shades of colour and magnificently large trusses of bloom, accompanied, however, by narrow-petalled flowers. The various shades of colour in the flowers of these plants, resulting from the blending of the three species, viz., Zonale, Inquinans, and Fothergillii, had for some time rendered the former term of "Scarlet Pelargonium" inapplicable to them, as the family already comprised plants producing flowers of various shades of scarlet, as well as pink, and even white. The first really good variety of the white-flowering sorts was, I believe, introduced into this country from the Continent, under the name of Madame Vaucher, and proved a great acquisition, being of a good habit of growth, with fine zoned foliage, and broad-petalled white flowers. Being also a free seeder, it produced, when fertilised by dark-flowered sorts, a great variety of plants, with flowers of good substance and of all hues, from the purest possible white to the darkest scarlet. Many of the recently-introduced varieties also show a purple or violet tinge, derived from their far-distant ancestor, *P. inquinans*. The intensifying or encouraging of this tendency, with a view to the production of blue-flowered varieties, is now the ambition of many hybridisers or cross-breeders. As regards this very desirable result, we have yet no reason to despair. Anyone inclined to form decidedly negative opinions upon the subject, should, before finally doing so, endeavour to obtain a sight of Mr. Pearson's and Dr. Denny's last batch of seedlings. And, although this great desideratum cannot be realised without, to some extent, exploding De Candolle's theory, viz., that the two fundamental types of colour in flowers, "yellow and blue," could not exist in one family of plants, and it does so happen that we have one yellow-flowering Pelargonium, viz., *P. luteum*, introduced about 1802.

It was long supposed that a union could not be effected between the modern Zonals and the Ivy-leaved species (*Latripes*), but this has now been accomplished, and, I believe,

that the credit of being the first to succeed in effecting this belongs to Mr. Wills. This union has been productive of some very beautiful and interesting varieties, some of them exceedingly dissimilar from each other in their habit of growth, &c. The varieties known as Willsii and Lady Edith are of dwarf and compact habit, and somewhat shy in the production of their very pretty violet-tinted flowers; while, on the other hand, I succeeded in producing a variety between *Peltatum elegans* (which, if not included in the family of *Latipes*, is closely allied to it) and a strong-growing zonal sort named Culford Rose, and this was itself a seedling from Madame Vaucher. The result of this cross was the production of a very extraordinary variety, which has been named Emperor, and which is possessed of very unusual growing power, and will, under favourable circumstances, grow not less than 10 or 12 feet high in a single season, producing at the same time a wonderful profusion of large trusses of rose-coloured flowers of good form. As a wall or pillar plant this variety of *Pelargonium* is, perhaps, unequalled. By again using *Peltatum elegans* and a bronze zonal variety, as parents, a very singular variety was originated, and which was named Dolly Varden, having finely-marked bronzy foliage, with a dwarf compact habit, and producing sparsely small trusses of very pretty violet-shaded flowers. But it unfortunately happens that none of these varieties can in any degree influence the advancement of the zonal section, as they all possess the characteristic sterility of the true hybrid, and will produce neither seed nor fertile pollen.

The introduction of the double-flowering varieties of the Zonal *Pelargonium*, may be justly considered as an event of importance in the history of floriculture, and I regret being unable to give the name of their originator, or the precise date of their introduction. For the earliest varieties, however, we are indebted to Continental raisers, and they have lately undergone great improvements at the hands of many growers in this country. The early introduced varieties were generally coarse in habit, and shy as to flowering. The quality of the flowers was also greatly inferior to that of the more recently introduced sorts, which, in habit of growth, profusion and quality of bloom, variety of shades of colour, &c., go far towards rivalling the single-flowered sorts. They are, moreover, possessed of a very desirable property, which does not greatly appertain to the single-flowering varieties—viz., the retention of their petals, which renders their blooms specially useful for cut flowers for glasses, &c. When the present condition of the zonal *Pelargonium* is taken into consideration, it will be found to possess varieties producing double (as well as sorts with single) flowers, and of all shades of colour, from the purest white to the darkest scarlet. There are even some with purple or violet-shaded flowers, as, for instance, *Victoire de Lyon*, &c., among the double, and *Ianthe* among the single-flowering sorts. As regards form, size, and substance, the blooms of many of them are nearly faultless, and the plants themselves are generally of a dwarf, compact, and desirable style of growth, while in another section of this extensive family of interesting plants, the shades of colour presented by their foliage have not inaptly been compared to the hues of the rainbow. So, taken altogether, it would almost appear that little more can reasonably be desired on behalf of this favoured family of plants, unless it be the production of blue flowers, and even this desideratum I feel loth to consider as outside the bounds of possibility, and even venture to hope that its realisation is less distant than many cultivators may imagine.

CHRISTMAS FLORAL DECORATIONS.*

THIS is a subject of the utmost importance to the gardener, who, at this festive season, often finds himself quite unable to meet the pressing demands which are made upon his resources. Therefore, it will not be out of place to take into consideration what plants and flowers are in season.

Stove and Greenhouse Flowering Plants.

I will first take stove-plants as they present themselves to the mind's eye. One of the finest of stove climbers for winter blooming is *Bougainvillea glabra*; next comes *Thunbergia Harrisii*, a very

chaste flower, produced in large clusters—the colour a delicate blue. Then follows *Passiflora princeps*, one of the best of the Passion-flowers, and an excellent winter bloomer. The various herbaceous *Gesneras* will be in flower as well—*Sericographis Ghiesbreghtiana*, an old plant, which is not cultivated so much as it deserves; *Justicia formosa*, *Eranthemum pulchellum*, *Libonias*, *Begonia fuchsoides*, *B. Saundersii*, and *B. insignis*. *Epiphyllums*, too, can be had in perfection at Christmas, as also that magnificent bulb, *Eucharis amazonica*; *Cypripedium insigne*, and *C. venustum*; *Calanthe Veitchii* and *C. vestita* may also be classed with stove plants for December. *Euphorbia jacquiniæflora* and *Poinsettia pulcherima* are amongst the most effective plants that there are for midwinter. Turning to greenhouse plants, there are several varieties of *Heaths* which are in full force. A few of the best are *Hyemalis*, *Gracilis*, *Caffra*, and *Colorans*. Of *Epacris* there is also a great variety. The *Camellia* will be in its season, as will also the Chinese *Primula* and *Cyclamen persicum*, which, at this season, are two real floral gems; *Cinerarias*, which were sown early, *Mignonette*, the *Carnation*, *Violets*, and the pretty white Roman *Hyacinth*; also *Luculia gratissima*—a grand winter plant which no place should be without, as it is nearly hardy. These, with a few forced flowers, will exhaust the greater part of flowering plants which are in season.

Fine-leaved and Berry-bearing Plants.

As regards ornamental foliage plants, there is no lack of variety. We have them of every shade and colour, but the chief of all ornamental plants for decorative purposes are the different varieties of Ferns—their beautiful fronds associating nicely with almost any variety of flower. Of plants which are grown for the beauty of their berries there is a great variety. A few of the best are *Solanum Capsicastrum*, *Aucuba*, *Skimmia japonica*, and *Ardisia crenulata*. Then there are several varieties of hardy shrubs which will afford a good supply in a cut state, and they also make highly decorative plants in pots, especially the gold and silver *Hollies*, which are very effective by gaslight. Here, then, in all conscience, is abundant material from which to make a selection to decorate our dwellings, and make them a source of pleasure and delight.

Various Modes of Decoration.

The principal subjects which suggest themselves under this division are entrance-halls, staircases, sitting-rooms, and dining-rooms.

Entrance Halls.—Here there is generally ample space for a good display of plants in pots. Some small groups of hardy evergreens, such as *Hollies* with different coloured leaves, intermixed with dwarf *Firs*, *Laurustinus*, *Skimmias*, *Aucubas*, *Laurels*, and *Box*, associate nicely with the statuary and other surroundings in halls, and add life and interest to niches, recesses, and other places in which they may be placed. Festoons and wreaths of evergreens look very pretty on walls and hanging from the ceiling or around pictures, as also do mottoes which are appropriate to the season, made of the leaves of evergreens or Holly berries.

Staircases.—In the subdued light of ordinary staircases it is only plants of bold and massive foliage that produce a suitable effect. Plants in such situations are generally, on entering the hall, seen with the light streaming down from the windows on the first landing, in which case all the foliage, as seen from the hall, appears dark, and the form of foliage, if of a bold character, is defined very strikingly against the light. Some very fine artistic effects may be produced by using plants of the American *Aloe*, *Dracenas*, and *Palms*, judiciously placed about staircases and landings where there is room. The stiff and finely-formed leaves of these, and some other classes which might be mentioned, harmonise well with the architectural features which, in ordinary houses, are somewhat more developed in the hall and staircase than in the other parts.

Sitting Rooms.—It is here that cut flowers will have to be used largely for filling bouquet-stands and vases for tables—of which there is a great variety of shapes to choose from. The prettiest and most simple of all is the trumpet shape, and one great advantage afforded by them is that they require so few flowers and leaves, which has great weight at this season when flowers are very scarce; another is that they are so quickly and easily dressed; and last, but not least, they show off choice flowers most effectively. But there are some who prefer vases of the March pattern, which have a small cup on the top of a single glass rod, proceeding from a shallow pan at the bottom. In dressing these, short-stemmed flowers fully expanded should be used for the bottom dish, while those for the top should be of a more feathery description, with some pendent ones hanging over the edge, but it must be borne in mind that to obtain a good effect care must be taken not to crowd them, or it will greatly mar their beauty. Vases and baskets or stands of plants may also be used, placing them in such positions that they will not interfere with the comfort of the occupants of the room. Of vases for plants it is scarcely necessary to enter into any description, as they are

* Prize Essay (in *Gardeners' Record*), by Mr. Holbrook, Carton Gardens, Maynooth.

generally used for single specimens, to stand on tables, &c., but to have them to look neat the surface of the pot should be covered with Moss. As regards stands, those in most general use are either round or of an oblong shape, generally made of wire. The common practice in dressing these is to cover the sides and tops of the pots with Moss; but at this season Ivy might be entwined around them, intermixed with a few sprigs of Holly, which would have a very pleasing effect. It is of very frequent occurrence that stands which have to be filled with plants for rooms have but very little space for good-sized pots with plants in them; and, under such circumstances, a few cut flowers could be put in, such as spikes of Hyacinths, *Eucharis amazonica*, Persian Lilac, &c., in bottles of water hidden amongst the Moss, so as to make the best arrangement with the other things.

Dining-rooms.—In the dining-room the principal object for floral decorations is the dinner-table, and, happily for the gardener or whoever has to carry out the decoration, the table is always covered with a white cloth, and nothing possibly can show off masses of foliage or high-coloured flowers to more advantage. Were it not so, there would often be a great difficulty in supplying in mid-winter a sufficient quantity of flowers that look well on a background of another colour, for the white affords scope for the display of almost everything that grows, but more especially foliage of a compound growth, to which it imparts an embroidered appearance. One of the chief things to guard against in dinner-table decorations is the use of any description of ornament that intervenes between the countenance of one person and another seated at the table; therefore nothing should be elevated more than 15 inches from the table-cloth, nor, if suspended, should it hang lower than from 22 to 25 inches, thus leaving a clear space of from 7 to 10 inches for one person to see another. But it is certain that many ornamental stands do interfere with this line of sight, and some in themselves are highly ornamental; however, others must determine whether or not the beauties of such things counterbalance their disadvantages. But it may here be observed that the most costly are by no means the most effective; silver and other metals seldom looking so well as plain glass when brought into conjunction with flowers and foliage. Carved work and ornaments on metal are worse than lost when partially screened by flowers and foliage, the plain parts alone looking well. Perhaps, however, when a silver stand takes the form of an epergne, its richness and costliness may attract attention, but the floral display must not be overdone. The fault of a great many such contrivances is that the bowl for flowers is too large, thus necessitating an unwieldy and unbecoming mass. In the decorations of the dinner-table there is probably nothing that has a more pleasing effect than fine-foliaged or blooming plants, which should be inserted in silver vases, or the pots covered with ornamental paper, and the top of the pots covered with nice fresh Moss, or some other material, to give it a finished appearance. The requisites in a plant for dinner-table decoration are, that it should not exceed 15 or 16 inches in height from the table-cloth; that it should have a uniform head, and, if possible, recumbent foliage; also, that it should not require a large pot. The number of plants conforming to these requirements is not large, but a few of the best are:—*Crotons* of two or three species—*Croton angustifolium*, when good, being the prettiest; *Dracenas*, both of the dark and green-leaved section, and certainly nothing exceeds neat plants of *Dracena terminalis* and allied varieties. *Grevillea robusta*, a very ornamental pinnate-leaved plant, is also good, as are also small plants of several varieties of Palms and Pandanus. Several Ferns are indispensable—none are more graceful than some of the Maiden-hair section, or nice plants of *Lomaria gibba*. *Gesneras*, too, are worthy of a place; but, perhaps, the most showy of all plants for this purpose is a well-bloomed Azalea, than which there is nothing more suitable. Although more might be said about the class of ornaments which are elevated a foot or upwards from the table, I will pass on to those of a dwarfier form, not but that there are many pretty tall designs, but as those which are of less height afford greater diversity, and what is of more importance, infinite diversity of design at a very small cost, and with an effect as pleasing as the other, I have the greatest confidence in recommending them. In the first place, for a good floral display, or, in its place, that of foliage on the table, the table itself ought to be wide, certainly not less than 5 feet, and if 1 foot more all the better. (The tables I have had the most to do with are between the two measurements given.) Assuming the table to be lighted by candlesticks placed upon it—these are generally placed in a line down the centre, say about 3 feet apart, and intermediate between these a stand of flowers, or it may be a plant is placed, while possibly some piece of plate or other ornament occupies the centre of the table, and the dessert-dishes are placed about midway between the outer edge and the middle. In general practice, there is frequently use made of sets of troughs made either of glass or zinc, about 1½ inches wide and ¾-inch deep, some of them straight and others made in a half circle, so that when they are placed

together they form a perfect circle or ring; these being filled with sand, are dressed with such flowers as are at command. Where the zinc troughs are used, it is advisable, before putting in the flowers, to dress the edge, that is, to fix some kind of foliage in the sand, so as to hide the edges of the troughs, in a neat and becoming manner; all descriptions of foliage are not adapted for this purpose, as a leaf that sticks out at right angles does not look well; there is nothing I know of more suitable than leaves of Ivy. Ferns, however pretty elsewhere, cannot well be worked in here, but, where glass is used, there is no necessity for hiding the edges, as they form an ornament in themselves. Sticking in the flowers is an easier matter. To those inexperienced in such matters, I may say that flowers of a purple or violet colour do not look well by candle-light, while scarlet, crimson, yellow, and white are very effective, and most star-shaped flowers look well. A set of troughs might be planted with *Selaginella denticulata* some time before they are wanted, placing them on a hot-bed or other medium affording a genial heat, in order that the Lycopod may make sufficient growth before it is wanted, and its appearance on the white table-cloth is, perhaps, more pleasing than the floral arrangement. The overhanging sprigs are generally sufficiently numerous to hide the edge of the trough, and they show their beautiful configuration to the best possible advantage against the white background. I am not sure that the addition of flowers here is any improvement; it certainly destroys the belief that a living plant is before you, and, whether the floral display compensates for this or not, I leave others to determine. Where bouquet-stands have to be made up for the sitting-room, and tall stands for the dinner-table, the drain upon flowers for these purposes leaves but few for what may be called flat table-decoration; consequently foliage alone, or relieved with berries, will have to be adopted. Here there is scope for diversity of design, although the materials for that purpose ought to consist of small foliage only, as the extreme width of the figuring ought not to exceed 2 inches, and that without cutting in any of the leaves. Box and Yew are two of the best evergreens for this purpose, suitable sprigs of these being tied upon wire, bent to whatever design is required, care being taken to throw upwards as many of the leaves as can be done. Figuring of this kind can be made to intersect the table in any fanciful form.

BIRDS AND BERRY-BEARING PLANTS.

We give up Hips and Haws willingly, as if by right they belonged to the birds; but the case is somewhat different when it comes to Holly-berries, Aucubas, Arbutus, and the lovely *Pyra-cantha* on the fronts of our houses. The linnets, I find, make an end of them in the most provoking manner. They care nothing for the bright-coloured pulp that delights our eyes, but they crave for the small seeds embedded in it. Hence they come and set upon the berries and scatter the rich colour into broken fragments, sending it in dripping heaps to the ground, and feast upon the seeds. In a day or two there is an end of all beauty. Now, supposing I trap a few of the marauders, why should I be written down or held up as heartless? I love our feathered songsters as much as most people, but is it anything so very terrible, if, as a horticulturist, I love the beautiful berries more? or, at least, have I not a perfect right, so to adjust the balance of nature, as to leave a few berries, and, perhaps, a few less birds? Again, for years past, we have had to cut our Christmas Holly weeks before the season, because the birds make a clearing raid upon it early in December. Almost before the Haws are finished they are down upon the Hollies. Have I not as much right to a few Holly-berries as the birds, and if they cannot be otherwise preserved, why should not the birds be thinned and the berries saved? Doubtless I may be told to net the berries in, but that is impossible. One would need sprat-nets to keep out linnets, and the expense and labour are prohibitory. Again, in the spring, the flowers of *Ribes sanguineum* are shed upon the ground in bushels by birds, an occurrence wholly due to mischief, for they do not seem to eat them. Doubtless bird enthusiasts will be ready with their insect-at-the-core theory. But, granting that to be the case, I should much prefer the insects to the total loss of the flowers; the *Ribes* continues healthy enough, but, what is the use of growing it at all, if its budding beauty is to go to strewing the ground every year? No, where shrubberies abound, and plantations skirt roads and fields, and furnish the country for miles, a few, perhaps many, birds must go if any berries or fruit are to be saved. By all means deal gently with them; but some must be taken and others left, unless our landscapes are to be berryless.

D. T. F.

NOTES OF THE WEEK.

— THE mild and open weather has effected vegetation about London a good deal, and many bulbs and hardy plants are pushing through the earth. The most attractive hardy plants of the season are the Mossy Saxifrages, evergreen Alpine herbs, which in mid-winter become masses of the most refreshing emerald green in many shades.

— THE largest flower now seen in our gardens, is that of the noble white tropical Water Lily, *Nymphaea dentata*, which is now in bloom in the Botanic Gardens in the Regent's Park. We never saw it finer than it is at present, even in summer. The flowers now produced are from a seedling plant of the current year. This plant is one of the forms of the *N. Lotus* of the Nile.

— IN Java, we learn that, when the ladies are in want of a husband, they have a pretty horticultural way of notifying the fact, by hanging an empty flower pot or vase up in the portico. If this be called a "plant" by the unsympathetic, no one can complain of due notice not being given.

— MANY of our friends must have opened their eyes during the past week, when strolling through Covent Garden Market, to see, in the windows of two well-known fruiterers, baskets of Pears of immense size, and offered at £20 and £21 per dozen. This we believe to be the highest price ever asked in Covent Garden or elsewhere for fruit of this description. We need hardly add that purchasers of these are not those who know most about fruits.

— WE learn that, in place of the wretched specimen of a rock-garden recently destroyed at Kew, one is being erected which displays about equally poor taste. The stones are arranged nearly regularly on banks rising one above another, almost as formally as steps of stairs. With so many good examples recently formed in our private gardens, this is much to be regretted. In a private garden, glaring errors in taste are bad enough, but, in the most celebrated public garden in the world, and the most frequented by visitors, they are a serious impediment to progress.

— A FINE range of half-span-roofed hothouses 156 feet long and about 13 feet high, destined for the accommodation of the medicinal and economical plants of warmer regions than ours, has just been completed in the Royal Botanic Gardens, Regent's Park. There is a warm, a cool, and an intermediate house, all well adapted for the end in view. We know of no equally fine set of houses for this purpose in any other botanic garden. The society has done well in carrying out such a desirable improvement. Readers having interesting plants of the above class which have grown too large for their houses, would do well to bear in mind the wants of the society in this way.

— IMPORTED fruits are just now plentiful, and, as regards quality, Raisins and Currants especially are excellent, while prices are absolutely below those prevailing at Christmas last year. The supply of Figs is also quite equal to the average, but there is a decided deficiency in French Plums, the harvest in the Bordeaux district this autumn having been unfavourable. Newtown Pippin Apples are already in Covent Garden Market; but they are not so good as they were last year. Owing, however, to the rapid passages now made across the Atlantic, they arrive in a wonderfully fresh condition, and it is very rare that any diseased fruit is taken out of the barrels.

— MR. C. H. WILLIAMS, a Fellow of the Geographical Society, tells us, in the *Hereford Times*, how oysters inhabit the Mangrove woods in Cuba. "For several years," he says, "I resided in that island, and travelled there more than the ordinary run of foreigners, and have several times come across scenes and objects which many people would consider great curiosities—one in particular. No doubt the reader will open his eyes at oysters growing on trees. Often have I seen the sneer of unbelief on the face of the ignoramus when the fact has been mentioned; but grow they do, and in immense quantities, especially in the southern part of the island. I have seen miles of trees, the lower stems and branches of which were literally covered with them, and many a good meal have I enjoyed with very little trouble of procuring, and not quite so expensive as they are in London at the present time. I simply placed the branches over a fire, and when opened I picked them out with a fork or pointed stick. These peculiar shell-fish are indigenous in lagoons and swamps on the coast, and as far as the tide will rise and the spray fly, so will they cling to the lower parts of the Mangrove trees, sometimes four or five deep, the Mangrove being one of the very few trees that flourish in salt water. Woe to the man who loses himself or attempts to penetrate one of these lagoons, boots and clothes being cut through by the sharp edges of the oysters! I have known more than one man who has been laid up for weeks from the lacerations received; one poor fellow in particular who fell out of my boat, and, in endeavouring to clamber out of the water amongst the roots, had his feet and legs so dreadfully cut that in a few minutes he fainted, and

it was with great difficulty we stopped the hemorrhage. The oysters are about the size of our natives, and are equal to them in flavour."

— THE hanging baskets in the Begonia House, at Kew, are, just now, worth inspection, Begonias being among the best plants that can be employed for basket-work. The colours of the variegated kinds are very beautiful as seen between the eye and the light.

— SEVERAL of the Cape or Medicinal Aloes may now be seen in flower in the succulent-house at Kew. The juice of these plants is intensely bitter, and, when inspissated, that of two or three species forms the Socotrine Aloes of commerce.

— AMONG tropical fruits now exposed for sale in Covent Garden Market, may be noted some extremely fine specimens of Shaddockes, Pomelloes, Bananas, Indian Figs or Prickly Pears, Litchis, and Custard Apples, besides the more common kinds, such as Figs, Almonds, Grapes, and Nuts.

— A FINE specimen of *Agave geminiflora* is now flowering in the Victoria Nursery at Holloway. Several very fine hybrids have already been raised among this fine class of succulents, and persons who have any species of Agaves in flower might do well by crossing them with others. It is seldom that two species bloom in the same collection, but this can be remedied by obtaining pollen from other gardens. Pollen keeps well and for several months in tin-foil.

— THERE was a great stir, says *Punch*, in our garden the other day. The Potatoes were ready to jump out of their skins. The Beet turned red to its very roots. The Celery lost their heads, and the Cabbages their hearts. The Peas split their pods with excitement. The Asparagus could with difficulty be kept in its bed. The Parsley curled itself up in a corner. The Cucumber alone maintained its habitual coolness. The cause of all this commotion was the presence of a noted vegetarian. The Potatoes never took their eyes off him.

— A FLOWERING-BRANCH of *Clodendron speciosum* is finely figured in the last number of the *Revue Horticole*. *C. speciosum* was first sent out by Mr. W. Bull, three or four years ago, and is said to be a hybrid between *C. splendens* and *C. Balfourii* or *C. Thompsonii*. It produces a profusion of dense cymes of handsome flowers, of a uniform deep scarlet colour, which commence to appear in June. Although a hot-house plant, it blooms in an intermediate-house in summer very freely, and, from its great beauty, should have a place in every collection of fine flowering plants.

— ODONTOGLOSSUM CORADINUM is now in bloom in Messrs. Veitch's establishment at Chelsea. It bears a spike of yellowish-white flowers spotted with brown or purple, and, in general appearance, very much resembles *O. pardinum* t. 5,993 of the *Botanical Magazine*. The rare *Vanda Cathcartii* is also showing flower in the same establishment.

— CRASSULA LACTEA, a beautiful winter-flowering succulent, is just now finely in bloom in several collections about London. It is one of the best of all window plants for blooming at this season, and deserves general cultivation for that purpose.

— THE *Albany Cultivator*, which is published in one of the finest Apple-growing countries in the United States, while noticing our measurement of the fine Cordon Apples grown at Pax-hill Park, says:—"The largest Apple which we have seen in America, was a Fall Pippin, grown in Cayuga Co., New York, and weighing 23 ounces—of course on a standard." We should like to see some of the Ribston Pippins imported from America to compare with our own. We remember to have seen this fruit very handsome and large in Western New York.

— MESSRS. CHARLES WHITEHEAD, John Algernon Clarke, William Carruthers, and H. M. Jenkins, the judges appointed by the Royal Agricultural Society to examine the essays competing for the £100 prize offered by Lord Cathcart for the best essay on "The Potato Disease and its Prevention," presented their report at the last meeting of the society's council. Among ninety-four essays, not one has been found worthy of an award; in fact, had anybody really succeeded in combating the disease, he would probably have done better with his discovery than by describing the *modus operandi* for £100. The causes most frequently set forth in the manuscript were degeneration of the tuber, Fungus on the tuber, superabundant moisture and wet weather, *Peronospora infestans* attacking the leaves and stems of the plant, electrical action, and unhealthy condition of the plant, induced by the use of certain manures. The principal remedies recommended were the cultivation of new varieties, use of disease-proof sorts, employment of lightning conductors, application of lime as a manure, avoidance of specified manures, steeping or kiln-drying the tuber before planting, dressing the haulm with sulphur, chloride, &c., cutting off the tops on the first appearance of disease, growing the Potatoes in small clumps or hillocks, bending down the haulm so as not to drip over the roots, and tying up the haulm to stakes, or cultivating sorts having erect stalks. Evidence in some essays contradicted in nearly all cases alleged results stated in others.

GARDEN DESIGN.

THE ISLE OF POPLARS AT ERMENONVILLE.

THE small island in the lake, at Ermenonville, with its picturesque grove of towering Poplars forms a remarkable object in passing through the domain, and at once arrests the attention of the visitor. The solemnity and gloom of the tall spiral-like trees recalls the aspect of Eastern cemeteries, where the dark foliage and deep shade of the Cypress mark the "place of tombs," to use the words of Byron, and cast their sombre shadows over and among the white marble gravestones with their sculptured turbans. In 1778 the Marquis de Girardin offered the author of "The Nouvelle Héloïse," "Emile," and the "Contrat Social," a quiet refuge in a pavilion adjoining the Château of Ermenonville, in which retreat, broken down by

laying out and planting being one of the first attempts to introduce the features of what the French termed "le jardin Anglais" into France. It was in 1763 that the Marquis de Girardin purchased the estate, which was at that time little better than a sandy, and in some parts rocky, desert; and he determined to make that desert a smiling landscape. This determination he succeeded in carrying out, partly by a certain amount of true horticultural taste, which induced him to abandon altogether the stately French school of horticulture, and steer clear of the solemn symmetry of Le Notre and his school; partly, also, by immense perseverance, and partly by lavish outlay. The good effects of a return to nature, as a chief model, are apparent on every side; but, unfortunately, our happy innovator arrived at the conclusion, in his horticultural theories, that it was his business not only to imitate nature, but to embellish it—in short, to "paint the Lily." This unfor-



The Isle of Poplars at Ermenonville.

hardships, he died within the year, and his remains were interred in the lake island, which had been one of his favourite botanising grounds, where he collected specimens to illustrate the lessons which, as an enthusiastic botanist, he delighted to impart to the children of the marquis and marchioness as some return for the kindness of his benefactors. He was a genuine lover of nature and of natural scenery, which may have suggested to the Girardins that in that spot, or such an one, he would wish his earthly remains to repose. However this may be, it is certainly a spot which he loved in life, and there he found an appropriate grave, in which his remains were deposited by moonlight on one of the soft July nights of 1778. Over the solitary grave a handsome tomb with suitable inscription was erected, which has often been described in every detail. The rest of the Girardin domain—that is to say, the whole of the picturesque park of Ermenonville—is well worthy of the careful study of the landscape-gardeners of all countries, its

tunate notion, and his determination to act upon it, is well expressed in the title of a work which he published upon the subject, "De la Composition des Paysages, ou des Moyens d'embellir la Nature." One may imagine that, starting with these views regarding the "embellishment" of nature, that M. de Girardin, when he had succeeded in transforming his desert into fertile land, planted it with thriving woods, and taken full advantage of the rocky portions to aid in his idea of the picturesque, next proceeded to spoil all by the threatened "embellishment." Sham castellated ruins were laboriously constructed in places where a castle could never have been, and imitation shepherds' huts were set up where there was certainly no pasture for sheep. Pagan altars, with half-obliterated inscriptions, were manufactured to attract the attention and applause of supposed *virtuosi*; and mouldering tombs were got up, with sentimental epitaphs, intended to charm the more romantic visitor. The horticultural marquis

had a notion of smoothing down nature, and tricking it out to his own pattern. The fact is, that neither the grand ruggedness nor the unadorned simplicity of pure nature, even in the most beautiful forms, had been fully appreciated at that time; and greater men than M. de Girardin had openly, though unconsciously, expressed as much in their works. Even the accomplished Sidney, in his "Arcadia," shows that he wanted to have nature polished up a little. His desire evidently was "a wide tree-shaded country, having a show, as it were, of an accompaniable solitariness, and of a civil wildness."

Of a very different kind was Rousseau's enthusiastic admiration. There is a passage in one of his letters to Malesherbes, from his retreat in the forest of Montmorency, which expresses the noble simplicity of a true lover of nature for herself. He tells his friend that, after he had seen the sunrise, while engaged in digging and delving among his Cabbages and other simple vegetables for his table, and after he had enjoyed his simple mid-day meal, he hurried away to his true garden—the wild forest; and he thus describes the supreme enjoyment he experienced when once securely hid in that glorious solitude:—"No sooner am I safe from intrusion in the depths of the forest," he says, "than I walk with a more tranquil step, and seek some wild nook, some sylvan depth, where none can interpose between me and nature. There she seems to unfold to me a magnificence ever new and beautiful. The gold of the Broom flowers and the purple of the last year's Brambles strike my sight with a sense of luxury which reaches and warms my heart. The majesty of the great trees that cover me with their shade, the delicate foliage of the shrubs that surround me, the astonishing variety of the herbs and flowers beneath my feet enchain my thoughts in a continuous alternative between observation and admiration. The numberless objects of interest and beauty, that call at once upon my attention, leading it first to one and then to another, often make me exclaim to myself, No! 'Solomon, in all his glory, was never arrayed like one of these.'"

H. N. H.

THE INDOOR GARDEN.

RE-TUBBING PALMS.

OLD METHOD.

DURING many years the tubs used in the Royal Botanic Gardens for the largest Palms then cultivated were made from large old oil casks, averaging from 4 feet to 4 feet 6 inches in diameter at the middle, and from 6 to 7 feet 6 inches in depth. These were cut through the centre, so as to form two good plant tubs. While re-tubbing, care is taken to allow 6 or 8 inches of a clear shift all round, with depth sufficient to allow drainage. The plant, previously prepared, is then lifted and placed in its new tub, as shall afterwards be described. I may here state that the tubs formerly employed, made from old oil casks, were found to last much longer than the new Oak or Scotch Fir tubs now resorted to. All are tarred inside and painted outside. In consequence of the limited ground space which we had in the old Palm house before the now one was built, it became impossible in many cases to put plants into larger tubs than those in which they were growing. The method adopted for such plants was to provide another tub of the same size—generally about 3 feet 9 inches deep and 4 feet 6 inches over at top. After being properly drained with portions of broken pots or tiles, and the drainage blinded with rough turf, soil was then filled to within 1 foot of the top. The plant intended to be re-tubbed is first placed on three or four bricks put close together under the bottom; the hoops are then driven down, and all the staves removed; the old bottom is likewise withdrawn, or such portion of it as can be done. The ball will be found to stand itself, being generally a solid mass of matted roots; but, if at all loose, a few staves, twice surrounded with a suitable rope, and firmly racked, will keep all together, as shown in fig. 1. After the removal of the old drainage from below, bottom boards and lifting ropes are inserted, the top of the plant being previously secured with guy ropes. The mass is then lifted by means of tresses, rollers, and handspikes, to such a height as to enable the new tub to be run underneath the suspended plant. The plant is then lowered on the surface of the soil, thus bringing the narrowest part of the old ball to be placed at the widest part of the new tub, leaving 16 or 18 inches of the ball standing above the top of it. After filling the tub with soil, a set of upright barrel staves, about 26 inches or so in length, previously assorted, are driven in all

round the top of the tub, the inside of which is also prepared in a sloping manner so as to give the top portion of the staves an inclination outwards, as seen in fig. 2. After all the staves have been arranged, a broad iron hoop is put round them, previously fitted at each end for a screw bolt. This is firmly tightened so as to keep the staves together; soil is then filled up to the top, and the requisite watering supplied. At one time most of the larger Palms in the old house presented an appearance as if growing in double tubs; but notwithstanding their somewhat uncouth look they grew well, and filled the tubs with fine healthy roots. About ten years previous to the Palms being transferred to the new house, two of the largest, viz., *Livistona chinensis* and *Sabal umbraculifera*, having stood for

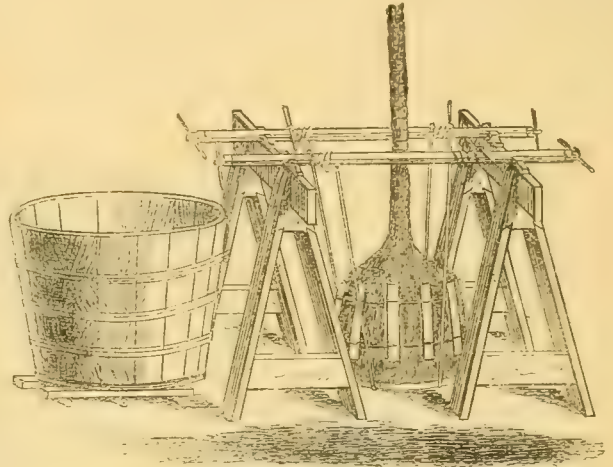


Fig. 1.

some years in double tubs, as represented in fig. 2, it was found impossible at the time to put them into larger ones. A square Oak box was therefore built round each, all the iron hoops and staves having previously been removed. A quantity of drainage was placed at the bottom, and the remaining space filled with rough turf and soil, leaving the bottom of the plants resting on the stone floor. This extra shift caused these plants to grow freely. Besides the two just mentioned, *Arenga saccharifera* and *Caryota urens* also increased rapidly by the double tub system.

NEW METHOD.

After the new Palm house was completed, the removal of the plants into it became an operation of no easy kind, for the old method of re-tubbing could not in all cases be resorted to, owing to

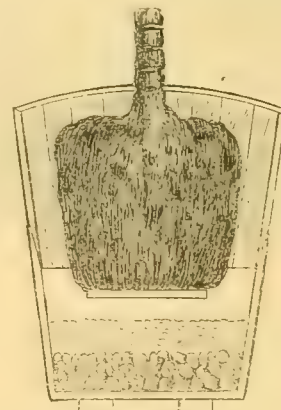


Fig. 2.

their weight, many of the plants averaging from 1 to 8 tons. As the larger ones could not be raised to the height necessary to run a new tub under them, other methods had to be resorted to. After much consideration I fell upon a plan which answered all my expectations, and which method I shall now attempt to describe. Some of the plants, after many years' growth, had attained a large size, several of them not less than 40 feet in height, without taking into account their bent down leaves. Two of the specimens, *Livistona chinensis* and *Sabal umbraculifera*, grew in large square Oak boxes, which had been built round them for fully ten years, the roots resting on the stone floor. These boxes were 5 feet in diameter, and 4 feet 6 inches

in depth. Before removing the plants into the new house they had to be re-tubbed. I shall confine my remarks on the re-tubbing operation chiefly to a fine plant of *Livistona chinensis*, which stood about 40 feet above the stone floor. The box in which it grew was entirely filled with roots, many of them protruding from below, owing to the excessive moisture which was constantly given, aided by the heat from the hot-water pipes, which then passed beneath them. Before the old box was removed, three holes were pierced through the bottom of the ball, close to the surface of the stone floor, large enough to admit strong new ropes 32 feet long and $3\frac{1}{2}$ inches in circumference, one passed through each, leaving 14 feet of the rope clear at each end. After this preliminary operation, the removal of the box was proceeded with, which left the ball of the plant standing as if composed of a network of roots (fig. 3). On the two sides, where the ends of the ropes came up, a portion of the under part of the ball was removed, in order to introduce pieces of strong

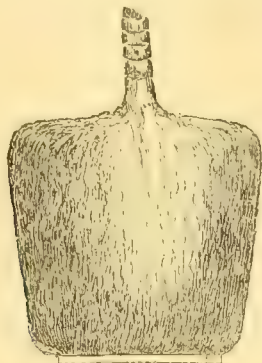


Fig. 3.

Oak boards 4 feet long, 6 inches broad, and $1\frac{1}{2}$ inch thick, one on each side, previously rounded on the outer edge of the under side, so as to prevent the ropes cutting during the process of lifting. These boards were inserted fully 12 inches under the edge of the ball, and resting on the lifting ropes. The four upright corners of the root mass were also removed, so as to allow of it being placed in a round tub. The tub for its reception, 22 feet in circumference and 4 feet 9 inches in depth, was made of strong well-seasoned Oak, and fitted with broad iron hoops, generally five in number. It had three strong wooden battens firmly fixed across the bottom, with 6-inch long nails. These battens should project 3 or 4 inches at each end, and are generally bound with hoop-iron; care must be taken that they touch the bottom of the staves, as they are essential for the after putting together of the tub. Before the new tub is taken down, two temporary wooden hoops are nailed round the outside, about 3 feet apart,



Fig. 4.

and one near the top inside. These hoops are placed in such a way as to allow the sides, after the removal of the permanent iron hoops, to be taken into three or four pieces (fig. 4), according to the size of the tub. Before taking down, however, it is necessary to number each end with chalk, so that they may be put together again as taken down. It is also necessary to be particular about the iron hoops, so as to keep them all with the widest side uppermost. With this precaution much trouble will be saved.

THE LIFTING APPARATUS.

I shall now endeavour to give an account of the apparatus employed for lifting:—Two strong wooden tresses (fig. 6), 7 feet high and 9 feet long, made with planks 9 inches broad and 3 inches thick, each

provided with two moveable cradles, (fig. 5), which are placed on the top of the tresses with strong iron pins, one at each end. Eight or ten holes are required at uniform distances at each end of the tresses, for the purpose of widening or contracting the space between the cradles, according to the size of the ball to be lifted. Two strong hollow iron windlass rollers are also necessary, each 8 feet 2 inches

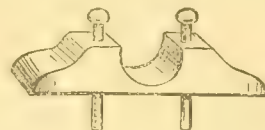


Fig. 5.

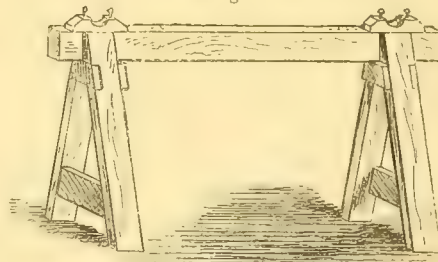


Fig. 6.

long and 14 inches in circumference, provided at each end with strong pieces of semicircular iron, properly bolted into the rollers. These rollers are put across the tresses, each end resting in the cradles just described. The tresses must be arranged one on each side of the plant, parallel with the lifting ropes, so as to enable the ends of these ropes to be brought up inside, then over the iron rollers, working



Fig. 7.

each towards the end, as in fig. 1. This is done by doubling the rope with a slight twist, and giving the end of each three or four turns round the iron roller, keeping the doubled portion for the insertion of a strong wooden handspike. With very tall plants, having heavy tops, it is sometimes necessary that the stems should be provided with three strong poles, fixed near the top of the stem in a triangular

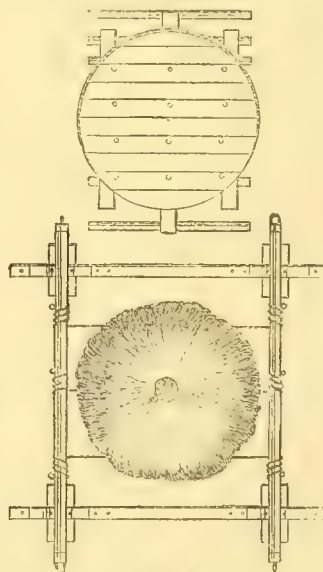


Fig. 8.

form, to prevent the possibility of upsetting during the lifting, a man being placed at the base of each. In ordinary cases strong guy ropes are sufficient. If the top is heavy, it is necessary that the ropes should be fixed to pulleys placed on the upright pillars of the house; but always above the level of that part where it is attached to the plant, it greatly assists to steady it during the

lifting. In order to give the men a better purchase while raising, four 10-inch broad planks are generally put round the plants, the ends being placed on strong boxes of a uniform height—say about 14 or 15 inches high. The bottom of the intended plant tub (fig. 7), after being prepared with its strong fixed battens, is then placed on one of the sides on which a tress is standing, as seen in fig. 8, resting on iron rollers, each about 6 or 8 inches in circumference. The hoops are also placed resting on the ends of the fixed battens, taking care that the widest edge of the hoops are kept uppermost. When everything is complete, and all the men at their places, the winding up is commenced as seen in fig. 1. Iron handspikes are used at each end of the iron rollers, two men being placed at each, and one man or two at each of the wooden handspikes attached to the lifting ropes, according to the weight of the ball. When raised about 6 or 8 inches above the floor, and all the old drainage and rubbish swept from beneath, the bottom of the tub with the hoops and temporary rollers is run under the plant, taking care that it is kept quite in the centre, and perfectly upright. In order that the lifting ropes should be easily withdrawn, four pieces of square wood or pantile lath, which answers the purpose best, about $1\frac{1}{2}$ inch thick, are placed on the moveable bottom, one on each side of each rope, to receive the weight of the plant and lifting boards, and thus take the pressure off the ropes. The plant is then lowered on the tub bottom, and thoroughly secured all round with small blocks and wedge-shaped pieces of wood so as to steady the rollers, and keep everything in position till the work is finally completed. The ropes are then withdrawn by means of the windlass rollers, working both rollers at the same time till the rope ends are free. The plant is then left standing on its new bottom. At this stage all the trappings are removed, such as tresses, lifting rollers, ropes, planks, &c., leaving the guy ropes, which must be thoroughly fixed, in order to keep the plant in its upright position till everything is complete. The lifting boards are then withdrawn one at a time, and all irregularities below firmly filled up with rough drainage and turf. The sides, as previously prepared (fig. 4), are now put round, the lower portions resting on the ends of the fixed battens, which allows the narrow edge and the bottom to fit properly into the groove originally prepared for it at the lower end of the staves. The iron hoops are then driven up, taking off the temporary wooden ones as the others ascend. The lower hoop is put on after all the others have been driven up, and is made to rest on the fixed battens. When firmly secured, it keeps the lower part of the staves tightly to the bottom. The lower portion of the tub is filled with drainage, and the rest with rough turf and soil, and thoroughly watered. After the removal of the blocks and wedges from below, the plant is in a state to be removed on its temporary rollers to any reasonable part of the house, merely by skewing them. If, as sometimes happens, the plant has to be taken directly right or left, the skewing of the rollers will not answer the purpose. To accomplish this the ends of the fixed battens are raised by means of crowbars, and two bricks or wooden blocks are introduced under each of the ends, one at a time; this height enables us to put in two temporary battens at right angles with the fixed one. The iron rollers are again replaced at right angles with the new bottom boards, the plant lowered on to them, and by the withdrawal of the bricks it can be run to the position wanted, when it is again raised on bricks, the temporary planks and rollers may be removed, a brick is then put under the ends of the permanent batten, and the plant allowed to rest.

In re-tubbing smaller-sized plants, where the ball of earth and roots is rather large to lift by ordinary manual labour, the same kind of machinery, but of smaller size, is employed, viz., tresses 6 feet 4 inches long, and 4 feet 2 inches high, made with planks $6\frac{3}{4}$ inches broad, and $2\frac{1}{2}$ inches thick. The lifting windlass rollers in this case are made of solid hard wood, 6 feet long, having iron handles fixed at each end, like the iron rollers here described. Where the balls only average 1 or 2 tons they can be raised sufficiently high to run the new tub on rollers entirely below them, as seen in fig. 1. In all cases it is necessary that the bottom of each tub should be prepared with fixed battens like those described for large-sized plants. If the ball should be more than 3 feet in depth it is necessary to raise the tresses on planks in order to prevent any risk of upsetting during the raising process. In no case should the surface of the ball ever be lifted above the level of the tresses. With all high lifts guy ropes are most essential, but in no case should they be used without pulleys, as described for heavy lifts. The same lifting power is commonly employed in the garden to raise heavy tubs on high wooden stands, and they are taken down when required by the same process. The same simple and portable machinery is very generally employed here to lift large and heavy evergreen shrubs and trees for the purpose of transplanting. This subject, however, will form a separate communication at some future time.

JAMES McNAB.

TREE-FERNS.

DURING the last ten or twelve years, these have become great favourites with all lovers of beautiful plants, and it is astonishing to see the vast quantities of them which are annually imported by our leading nurserymen, and which, as soon as established, find a ready sale amongst the numerous plant growers of this country. In round numbers there are about 200 distinct species of Tree-Ferns known to botanists; these are scattered over various parts of the globe, mostly in tropical countries; whilst, in more temperate climes, New Zealand, Australia, and Tasmania are their principal resorts. From these, until lately, our principal supplies have been derived, and the thought has frequently occurred to me that as Tree-Ferns build up their stems but slowly, and we import them very rapidly, the chances are that we shall soon have more examples of these giant Ferns in England than are to be found in their native habitats. Be that as it may, however, the fact that these plants thrive in ordinary greenhouses and conservatories enables even amateurs, whose means do not allow them to indulge in the luxury of a plant-stove, to enjoy these gems among Ferns; besides those from temperate climes, however, we have now a goodly number of species from tropical countries. On a former occasion, I expressed my views relative to the best method of constructing a house for the cultivation of Filmy Ferns, and, in the case of the plants now under consideration, I strongly believe in the advisability of growing them below the ordinary ground level. If no natural ravine or dell exists in the garden in which to construct a house, then make one, for there is no real necessity for a Fern house to have high glass sides or any light at the sides at all; and, under all circumstances, where a house is to be constructed for the growth of Tree-Ferns, I would have the bottom several feet at least below the surface. By this means, height is obtained at little expense, and thus the more vigorous and quick-growing kinds will not rapidly outgrow the accommodation. By this means, too, a splendid opportunity is afforded for forming elevated view points, from which a sight may be obtained of the tops of the plants, without which half their beauty is lost. In addition to these advantages, moreover, houses constructed in this way may be heated at a trifling cost compared with structures wholly above ground, because they do not present much surface to the external atmosphere, and during the hot dry summer months a more equable and genial atmosphere can be maintained. Such houses, be it remembered, are only recommended for Ferns, and not for flowering-plants, but, at the same time, it is not absolutely essential that Tree-Ferns should have such accommodation provided for them, inasmuch as they will thrive admirably in any ordinary stove or conservatory, but, where a house is to be built specially for Ferns, the above-named place is, I consider, the best that can be devised. In ordinary greenhouses, Tree-Ferns in pots form splendid ornaments, and they will accommodate themselves to such houses, where, from want of sun-light and other causes, any other class of plants would not only do badly, but perhaps refuse to drag out even a miserable existence, so that they specially recommend themselves to any one having a glasshouse, with an unfavourable aspect. To amateurs, in particular, I would say, avoid over-potting Tree-Ferns. It is too much the fashion to persist in annual pottings until they become both unwieldy and unsightly, and, without wishing to assert that "they do these things better abroad than we do," I must record that my experience coincides with continental customs, more especially with those of Germany, where large Ferns and Palms may be seen growing in what, to many English gardeners, would seem incredibly small pots and tubs. The secret of their being kept in good health lies in a little extra supply of water, and thus they have a far better appearance than in the monstrous tubs and pots in which they are so frequently seen in our plant-houses. Tree-Ferns vary much, both in the height and diameter of their stems, such variation being caused by the greater or less number of fronds which go to form a spiral whorl, the kind of development by which their stems are built up. As a rule, those from temperate regions produce the greatest number of fronds in a single whorl, and, consequently, have the stoutest stems, and are slowest in growth

The tropical kinds have usually slender stems, which are more or less armed with sharp spines, and grow up somewhat quickly. In potting, use good peat and loam in about equal parts, adding a good portion of sharp sand, and the drainage must be perfect; they like an abundant supply of moisture in the air, and the stems should be frequently sprinkled with the syringe to encourage the development of stem roots, which add so much to the health and vigour of the plants.

Dicksonia.

This is a genus of stately and beautiful plants, one or two species of which are now tolerably plentiful in our greenhouses and conservatories; as a genus they are distinguished by their coriaceous fronds, the sori being situated upon the end of a vein near the margin of the pinnules, and enclosed within a coriaceous two-valved involucre. The following species are in cultivation in this country:—

D. antarctica.—I commence with this species, because it is the most noble and stately of all those yet in our collections; the stem is both tall and stout, attaining in its native country, we are told, to from 30 to 35 feet in height, and measuring from 1 to 2 feet in diameter. Upon the summit of these stately stems is borne a grand crown of dark green, plume-like, somewhat coriaceous fronds, which vary from 3 to 10 or more feet in length. The young fronds are beautifully arched, but with age they bend over and become more pendulous. The beautiful symmetry of this stately plant cannot fail to recommend it to every plant-grower. It would appear to be common in mountain gullies and ravines in Tasmania and Australia. Of this plant our illustration affords the reader a very correct idea.

D. squarrosa.—It attains a height of from 10 to 15 or 20 feet, the stem being always far more slender than in the preceding species, and it has the peculiarity of putting out from various parts of its trunk what appear to be lateral growths, but I have never seen these attain to any size. The stems are clothed with the bases of the old fronds, which are black, and of such a peculiar dry roughness as to cause the hand to involuntarily shrink from them. The fronds are three or four times divided, from 3 to 6 feet long, dull dark green on the upper side, but paler below, the rachis being rough and hairy. The peculiar habit of its fronds has caused me to apply the name of "Table-top Fern" to this species. It thrives admirably in a cool house. Native of New Zealand, over which country it seems to be widely distributed, and to which it is peculiar.

D. fibrosa.—This species has somewhat the appearance of *D. antarctica*, but is sufficiently distinct to be recognised at a glance. The stem is stout, attaining, in a wild state, a height of 10 or 15 feet, although I have not seen stems in cultivation higher than 5 or 6 feet. They are profusely clothed with fibrous roots, which completely cover the bases of the old fronds. The fronds are twice or three times divided, very broad for their length; they are dark green above, the pinnules turning up at the ends, giving them a peculiar crisp appearance. It would seem to be confined to very moist places in woods and near the margins of streams, and, although a native of New Zealand, has never been brought to this country in any quantity, so that it is either not very plentiful there, or is not found in company with other species.

D. lanata.—Very little is known respecting this plant. I have only seen it a few times, and never with a trunk of any size, therefore to what height it may attain I am unable to say. It appears to

be both a distinct and handsome Fern; the fronds are bi-pinnate, with the pinnules deeply pinnatifid, coriaceous in texture; base of the fronds, pale brown, and, together with the rachis, densely furnished with pale woolly scales. Native of New Zealand.

D. Youngii.—This species would seem to come near *D. squarrosa*. The plants which I have seen of it, however, appear to be altogether distinct. The stem is slender, and the whole plant is softer in texture, and, moreover, it seems to be found in the same locality as *D. antarctica*, and not in New Zealand at all. Some stems of it have been recently imported, from which we may be better able to determine the differences than from young plants. Native of New South Wales.

D. Sellowiana.—A fine noble species, apparently nearly allied to *D. antarctica*, yet sufficiently distinct, and, coming from a warmer clime, it requires the temperature of the stove. Stem stout and erect, bearing a fine crown of fronds, which are deep green and smooth, the great distinctiveness of the fronds being in the peculiar bluntness of the pinnæ. It is a native of the Organ Mountains in Brazil.

D. arborescens.—This is a most beautiful and distinct plant,

but extremely rare in cultivation. The stem is stout, from 6 to 10 or 12 feet high, and sometimes branched, but, whether these branches are really lateral growths or only caused through the attachment of seedlings, I am unable to say. Fronds tripinnate, very thick and coriaceous in texture, more so, indeed, than in any other species of this genus, whilst the pinnules and segments are very large, the crown and stipes are densely clothed with ferruginous or amber-coloured soft hairs. Fronds, twice or three times divided; segments rounded and very obtuse; colour, light green. This is a very rare plant in cultivation, and in its wild state is very local, as I am not aware that it has been found in any other place than on the summit of Diana's Peak, in the Island of St. Helena.

(To be continued.)

LACHENALIAS.

WE have here an old, and, we might also add, much-neglected genus of Cape bulbs, all the species of which are interesting, and some of them highly ornamental. Like most other bulbous-rooted plants from southern Africa, they require a comparatively cool temperature and a decided season of rest

in order to grow them successfully. Their nomenclature, in common with that of other bulbs, is rather confused, and we frequently find the same plant, or some of its varieties, under widely different names in even our best public and private gardens. Within the last year or two a taste for half-hardy and other bulbs has sprung up; and Mr. J. G. Baker, Mr. Peter Barr, Mr. A. F. Barron, and other botanists and cultivators, have done much towards improving their nomenclature and culture. The present genus is valuable, as nearly the whole of the species at present in cultivation flower either during the winter or early in the spring months; but the season can either be retarded or prolonged by adopting divers systems of treatment, as may be deemed desirable. *Lachenalias* grow best in a greenhouse or cool frame, throwing up stout spikes of yellow, green, orange, and vermilion-coloured flowers, along with fresh glossy green, or elegantly mottled leaves. Many cultivators fail with deciduous bulbs by neglecting to water them after flowering. Nothing is more



Dicksonia antarctica.

common than for them to be placed on a dry shelf, or thrown under the nearest stage, immediately their floral charms are past, and there they frequently remain without a thought until wanted for forcing into bloom the next season. A large proportion of the bulbous section of endogenous plants form their spikes the season before they flower—that is to say, the elaborated juices of this year's foliage are stored up for the next season's bloom; so that, if the leaves are dried off prematurely, the bulbs are necessarily weakened, and disappointment follows. The common Hyacinth may be taken as an excellent illustration to the preceding remarks, for, if a bulb be severed soon after the foliage naturally dies off in the autumn, the newly formed or embryo inflorescence will be found, and this goes on gradually enlarging at the expense of the elaborated sap of the preceding year, even though the bulbs are kept out of the ground and supposed to be at rest. The Dutch growers are very careful to feed their bulbs liberally up to the period when they are known to flower best and the strongest bulbs, that is those "well-ripened" (to use a technical term), will flower with but very slight assistance in the way of nourishment. The flower-spike being to a great extent formed and supported by the elaborated sap of the year before. After flowering, *Lachenalias* should be watered regularly until the foliage shows signs of dying off, by turning yellow at the tips, when moisture at the root may be gradually withheld, and the bulbs allowed to become only just moist, when they may be stored in a cool airy place until wanted for potting. They may be potted at any time from July to October, according to the season they are required in flower. The best compost is one composed of sandy loam, peat, and well-decomposed manure. The pots should be thoroughly well drained, and three or four bulbs may be placed in each so as to form nice little plants for decorative purposes. Some of these plants, as *L. maculata*, *L. orchidioides*, and *L. tricolor*, have glossy deep green foliage blotched with purple or brown, while others, as the true *L. pendula*, have deep green leaves without any markings. I subjoin a descriptive list of the forms most generally met with in cultivation as likely to be of service to those interested in bulbous plants. Other species, or varieties, are, doubtless, to be met with, and as the season for their flowering is now at hand we should be glad to receive specimens of flowers and foliage from which to make drawings for publication or future reference.

L. LUTEOLA.—This is a very beautiful variety recently figured in the *Botanical Magazine*. It generally blooms in March or April, and bears a stout spike of bright yellow flowers, the outer petals being about half the length of the inner ones, and slightly tipped with green. The leaves are oblong-lanceolate, and of a deep glossy green colour.

L. ORCHIDOIDES.—The foliage of this plant is something like the last, but heavily blotched with purplish-brown. This is a very variable plant, bearing white and lemon-yellow flowers on a stout glaucous stem, which is blotched like the foliage. It flowers about the same time as the last-mentioned species.

L. PENDULA.—The true plant is very distinct, although various forms of other species are often grown under this name. The foliage is very robust, ovate in form, the breadth being about one third the length, and of a clear deep green colour, slightly glaucous above. The flower-spike is very stout, about one-third longer than the leaves when fully developed, and faintly blotched with brown. All the segments of the flower are nearly of equal length, the outer ones being of a bright orange-scarlet tipped with dull purple. Like the other species, it comes from the Cape, and flowers from December to April.

L. QUADRICOLOR.—This species has linear pendulous glossy-green leaves, one being an inch or two longer than the other, deeply channelled, and bears its flowers in slender lax spikes. The flowers are brightly coloured, the outer petals being much the shortest, and of an orange-red tipped with green. The inner petals are bright yellow, expanding at their apices, which are tipped with soft purple. Flowers freely from January to March. There is a variety of this species having crimson-tipped flowers and blotched foliage, besides being

much stronger in its habit of growth. It blooms at the same time as the last.

L. TRICOLOR.—This species has oblong, lance-shaped, spreading foliage, spotted or blotched with brown or faint purple. The flower-spike is rigid, and the flowers are of a faint yellow, tinged with green; bright orange when in bud. It flowers at the same time as *L. quadricolor*, and deserves general cultivation. F. W. BURBIDGE.

THE FRUIT GARDEN.

PRUNING PEACH AND NECTARINE TREES.

THE great object, when a young tree has been planted, is to cover the wall with it as quickly as possible, at the same time to keep it well furnished with young wood from the bottom to the top. To get it well furnished at the bottom, seems the only object many have in view when pruning a young Peach tree. I think no one will dispute the necessity of having an eye to this point, as it is almost impossible, if not attended to when young, to do it afterwards; at the same time it must be admitted to be quite as necessary to cover the wall in the shortest possible time, bearing in mind, of course, to aim at doing it effectually, and ever maintain that cardinal law of pruning—to follow rather than try to supersede nature. Now, from my own experience, I know that both can be accomplished effectually at the same time, and by doing so we may dispel that most erroneous idea, too often entertained by many with regard to all fruit trees, viz., that of planting for the next generation. To make myself better understood, let us take the case of a young tree just planted. The rule with eleven persons out of a dozen, would be to cut it back, the reason given for so doing, being to get the tree well furnished with young wood well "home;" very well—supposing then, that six or eight eyes are left to each shoot after pruning, those will, in the natural course of matters, produce as many shoots. What is to be done with so many? Rub them off—"disbud," to be sure, will be said. Just so; but why first cut the tree to produce so many growths, and then destroy them? I have long since considered this a folly, a waste of time, in covering the wall, which simply means also a loss of fruit. It is no less a waste of energy on the part of the tree. The six or eight growths are reduced to two on each branch. We are supposing that it is a vigorous-growing tree; of course a weak sickly tree must be dealt with differently. We find that the tree, when a fair growth commences, being deprived of the greater number of its sap-flowing channels, is thereby forced out of character; hence those watery shoots we often hear complained of, and the disfiguration we often see—the gumming, &c. How to manage, and where to prune such wood, are questions that many young gardeners and amateurs have puzzled themselves over. Where is the remedy? The best I can give is not to produce them, if possible. Need I say what one of those shoots is like? If grown in a low, wet, cold situation—indeed, in almost any situation in such a season as the last—there will be found laterals growing late with great speed, the wood of which is green and soft. One sees this with great concern, and asks himself where he is going to cut the shoots in the coming March pruning. Not an eye is left between the few at the bottom and a few again at the top. These are plump and tempting, are they not? But they, with the whole shoot, must be cut away down to the few round eyes at the bottom, leaving perhaps only six, eight, or more inches of wood. This is slow work to fill a 12-foot wall. Friends of the spur system will say, "Pinch in the laterals during the summer." Well, every one to his fancy; but it seems to me that these are not suitable even for this purpose, for a strong shoot will produce laterals without an eye from 4 to 6 inches from its base; prune it below the first eye and the spur dies—a blank is produced. We do sometimes find at the base of a weak lateral an eye; and, even should it be some distance from those at the base, in order to get more length in the shoots, we are apt to cut it there. The wood being unripe, the eye at times will not germinate. Should it do so it assumes the same worthless character under the law of "like produces like," and often the whole branch, in

consequence of the amputation, decays down to the next branch, often to the centre; a disfigurement is caused, with a loss of time in covering the wall—considering this, the question presents itself—how may we avoid all this? Well, I think, first we should employ nothing but good sound soil to plant in, and use no strong stimulating manures, unless the tree makes a poor growth, also plant in a firm soil, through which the roots may slowly work their way. And bear in mind that, for the first two or three years, growth and establishment should be the first objects. The sooner the tree gets established the better. To this end, then, I say, let at least half of the annual shoots remain, for the following reasons:—(1.) It will greatly prevent the growth of strong, watery, unripened, worthless, overgrown shoots. (2.) The wall will be covered much sooner. (3.) They will fruit some years sooner, and more abundantly. It may be thought that the extended shoots will run away with the lion's share of sap, that, as a rule, proceeds to the extremities first; but any one who has studied tree culture knows full well that the longer a shoot is left in pruning, the weaker the growths the following year; in any line, except a perpendicular one, less growth and more fruit. The object of short pruning is to fill up with young wood, well "home;" of the long, to go on at once to cover the wall, and soon to produce fruit. In pruning, it is not necessary for one to say to what length the shoots should be cut; that depends entirely on their strength. It does not always follow that every other one should be left short or long; rather be guided by the vigour of each shoot, at least for a year or two, more than by the exact shape of the tree. The central shoots should be kept the shortest, a rule which should be strictly adhered to in all cases.

Let me here say, while advocating a sparing use of the knife in pruning young trees, I am a strong advocate of short pruning after the tree is in a bearing condition—after the outline or framework is formed. The annual growth, if of a medium size, of some well-ripened wood should be cut, say from 8 to 10 inches yearly. Nothing will sooner throw the tree out of a good healthy productive condition than leaving too long an annual growth (it is well known the tree's life is shortened by it) from 14 to 20 inches long in one season. It has most disastrous tendencies. The vigour of the tree is destroyed, the crop of fruit is lessened, and the tree is hastened to a premature death. You may get a few more fruits for a few years, but the tree becomes at length exhausted. The Peach-tree is not one of the most easy to recover after once being in an unhealthy state. It is the last tree in the garden we can cut back, for instance, to form a new head. It resists an amputation (in some cases) of a branch near the stock, if of some age; it seldom heals kindly after it, and without great care it may be the means of throwing it into a sickly state, that ends in premature death. Cut the young wood, but leave the old. Nature seems unkind to this tree; the power of recovery is wanting in a marked degree. Cut a branch off an Apple, Pear, or Plum-tree, it will at once set about replacing it; not so the Peach-tree. Therein, to me, lies the disadvantage of spurring this tree. What is to be done with the old spurs? to say nothing of old branches, when they get too long and unsightly?

I have said nothing of root-pruning, a practice I strongly recommend after the tree has attained the required size. In younger ones, it has the same disadvantage as too short pruning.

JOHN TAYLOR.

Maesgwynne, S. Wales.

THE "SETTING" OF GRAPES.

THERE was a period, almost within the recollection of middle-aged men, before Californian or Australian gold was discovered, or cheap glass had become the order of the day, when Vines were generally grown in houses glazed with diminutive panes of glass, nearly one-half the roof being formed of overlaps and the other of timber; and when also, the young wood was trained-in as closely together as that of the Morello Cherry generally is now. The consequence was indifferently ripened wood; and when the flowering season came round the rods showed abundance of long lanky semi-tendrils, with a few flowers here and there about their extremities. This state of matters required an amount of skill to "set" the Grapes which was not always forthcoming. This has now changed. Large, light, airy

structures are the order of the day; the improvement in the Vines grown in them being nearly as great as that in the structures themselves. But notwithstanding all these advantageous circumstances, indifferently "set" Grapes are by no means uncommon. How best to "set" Grapes is hence a subject which much occupies the pages of horticultural periodicals, particularly at the season of the year when the flowering period again comes round. It is essential, in order to maintain and keep up to the highest possible point the health of the Vine (particularly while it is forming its young wood, which includes the period of its flowering), to grow it in a moderately moist atmosphere, more or less water being applied in proportion to the amount of artificial heat used, or the strength of the sunshine. The fact that this is generally understood and generally practised, has something to do with Grapes not "setting" satisfactorily—the more so, when the weather is dull and cloudy while the flowering period lasts; because the Vine, like most other exotic fruits, "sets" its flowers most surely in a warm, somewhat dry atmosphere—not necessarily dry, however, the whole twenty-four hours, but only for a few hours during the warmest part of the day, the period when impregnation takes place. In bright sunny weather this dryness is obtained, and at the proper time, by the necessary ventilation required to regulate the temperature, which allows the moist atmosphere to pass gradually out, and to be replaced by a more congenial, drier, and warmer air. When dull sunless weather occurs at this period, special attention should be given to keep the pipes sufficiently hot to allow of a temperature of from 80° to 85° being kept up for a few hours each day, the ventilators being at the same time opened sufficiently to allow of a slow change of atmosphere, so as to carry out the extra moisture, with which it may be surcharged.

Grape-growers vary their treatment considerably at this stage of growth. Some prefer a very dry atmosphere and very high temperature, which doubtless is favourable for the "setting" process in, at least, some varieties, such as Muscats, Black Morocco, &c., but is unfavourable to the health of the Vine at this critical period of its growth, while actively engaged developing its tender shoots and delicate foliage, causing the growths to "come weak," and favouring the rapid increase of injurious insect enemies, which are almost sure to make their appearance at a later period in large numbers—a standing source of annoyance and injury during the remainder of the season. Others prefer a moist atmosphere, and even recommend continuing syringing during the flowering process, if the weather proves fine and plenty of sunshine occurs, so as to admit of the atmosphere inside the houses getting dried for a few hours every day. This may be safe practice if the conditions are as just explained; but, if otherwise, it is unsafe, for unless the pollen is quite dry, it will not readily act, and consequently impregnation will become all but impossible. The confined state in which Vines under glass are grown is not favourable to the process of impregnation—the glass excluding them to a large extent from the action of the wind, which would otherwise largely aid in spreading the pollen, and bringing it in contact with the stigma. I have long had in use here an admirable but very simple form of trellis attached only to the top and bottom of the Vineries and Peach-houses, &c., with the horizontal wires screwed tight, to which the Vines, Peaches, &c., are trained. A sharp blow with the hand makes it vibrate like a fiddle-string, sending up from and surrounding each bunch with clouds of pollen. This is certainly a much better plan than touching the bunches with the hand, as is generally done, saving much time, and, moreover, doing the work more effectually.

As is well known to all engaged in the culture of the Vine, there are some varieties which "set" under ordinary treatment in the greatest abundance, such as the different varieties of Hamburgh, Trebbiano, Black Prince, &c. There are not a few others which will not "set" freely, unless grown in a high temperature, and assisted in the process of impregnation in some way—by dispersing either their own or the pollen of other varieties amongst their flowers; and when this is properly attended to, I believe there are no varieties but what can be successfully "set" in all weathers. Such at least has been my own experience, with the single exception of the Muscat Hamburgh, which, when started after the beginning of February, "sets" with ordinary attention as freely as most other varieties, but when started a few weeks earlier appears to "set" equally well, and will swell for a time till after the thinning of the berries takes place, soon after which they begin to swell irregularly, whole shoulders having more than half their berries seedless and scarcely half the usual size, while others in large numbers do not grow much larger than Peas. I have observed the same thing to a less extent with other varieties of Muscat. Is this the result of partial but imperfect impregnation, arising from the want of sunshine or light? Certainly it is not from the want of heat, or caused by a stagnant damp atmosphere. If it were possible, in general practice, to grow each variety of Vine in a separate house, I believe the treatment of each

in the hands of expert culturists, would be slightly different. Some, such as the Muscats, Black Morocco, &c., would require both root and branch temperatures higher. Others, such as Ham-burghs, Sweetwater, &c., could be grown in comparatively cool houses. Some would succeed best in strong loams, others in lighter soils, all requiring thorough drainage, and a liberal allowance of water during the earlier stages of their growth. The variety of treatment applicable to the different varieties would be doubly important during the flowering period. In general, I would recommend all the Muscats and most of the shy-setting varieties, to have the temperature increased both by night and day; the night temperature to run from 75° to 72°, being highest during the early part of the night, falling a few degrees towards morning, and rising during dull weather at least 10° for a few hours in the warmest part of the day, always accompanying the rise of temperature with additional ventilation. In bright sunny weather, the thermometer, with plenty of air on, may be safely allowed to rise from 90° to 95°; never omitting, in some way, the dispersion of the pollen during the hottest part of the day. Free-setting varieties, such as the Ham-burghs, set readily with an average of 6° or 8° less heat than the Muscats, but all Vines should have an additional heat, both by night and day, while in flower.—A. FOWLER, *Castle Kennedy, in "Florist."*

AERATING FRUIT-TREE BORDERS.

IN what way should channels be formed for most effectually aerating fruit-tree borders, particularly as regards Peaches and Apricots? I have been led to this inquiry by observing in a garden where they are employed, that the connection with the atmosphere is secured by vertical tubes at the back and front of the border, within a few inches of the same level. Their formation upon such a plan cannot answer the purpose for which they are intended, being defective in the most essential principle. The possibility of air circulating in channels so formed is contrary to reason, it being a fact admitting of no contradiction, that air, by heat, becomes specifically lighter in one place than in another, and the expansion is in proportion to the intensity of the heat. Therefore, in obedience to a universal law, the lighter portion ascends, while the less rarefied rushes in to supply its place, which is the cause of aerial currents, whether large or small. It is quite obvious that, though air cannot, like other substances, be felt, it is nevertheless a body possessing weight in proportion to the abstraction of heat. Then we cannot suppose that a volume of rarefied air can displace one of greater density. The system of heating hot-houses by hot air has given many of us a clearer idea how to produce artificial currents. Well, applying this principle to the case under consideration, it is easily perceived that solar-heat, acting with equal force upon these tubes, fails to exert an influence upon the air lodged in the bottoms of the channels, and is, to use a common expression, like "pulling two ends of a string without in the least altering its position. The best plan to secure circulation would be to introduce the cold air considerably below the surface of the border, which would ascend to the surface rarefied by the heat of the sun, and the circulation throughout the year would be just in proportion to the heat of the atmosphere. That a circulation of air among the roots is necessary, few will deny; and even the most sceptical will admit its invigorating power. Yet they cannot be brought to understand that special channels for conduction are required. But let me tell such, that, unless the soil, of which the border is composed, is very porous, the formation of air channels should certainly have attention. The fruit will be better flavoured, and the health of the tree of longer duration, owing to a more perfect secretion of its juices. The roots are brought into contact with atmospheric nutriment, which is absorbed, and again replaced by a fresh supply; for the existence and continued health of the tree depend upon the absorption of this description of food, as well as that supplied by the leaves. An easy access of air lessens the capacity of the soil for holding an injurious amount of water, and promotes the decomposition of vegetable and inorganic manures. Although these remarks may not be the means of calling attention to the subject, its thorough investigation is not the less important.

A. C.

Espalier Gooseberries.—This method of training the Gooseberry is not so much practised as it should be, though the advantages resulting from it are numerous. Some of the most choice varieties of this fruit are rambling in habit, exhibiting little tendency to form upright growth; consequently the bearing wood is near the ground, so that the fruit is very liable to be destroyed by heavy rains. To preserve this fruit any length of time after being quite ripe, a free circulation of air is indispensable. This, I think, can only be secured by adopting the espalier mode.—F.

THE GARDENS OF ENGLAND.

BUCKINGHAM PALACE.

THE architecture of the palace itself, commenced in the reign of George IV., has been severely criticised, as inferior even to many residences of the lesser Continental princes, to say nothing of the royal palaces and châteaux of France. When the story of its erection is told, this is not to be wondered at. The site of Buckingham Palace was, in 1703, occupied by the residence and grounds of Lord Arlington, of whom they were purchased at that time by the Duke of Buckingham the friend and patron, and, in some sort, rival, of the poet Dryden. The old buildings were at that time entirely removed, and the somewhat stately mansion, with its façade of the Queen Anne style of architecture, with its red brick and handsome stone dressings, which many now living still remember, was erected in its place. This residence was purchased by George III. in 1761 as a Queen's house, at the time that old Somerset House, then a royal residence, was granted by Parliament for public offices, and splendidly re-built after designs furnished by Sir William Chambers. Buckingham House, as it continued to be called, became the favourite residence of Queen Charlotte, and it was in that building that all the children of George III. were born, including the Duke of Kent, the father of her present Majesty. In 1823, George IV. commenced the transformation of the old ducal mansion into a royal palace, under the advice of Sir John Nash. Parliament proving unwilling to make a grant for a palace, certain sums were obtained, ostensibly for the repairs of Buckingham House, with which inadequate resources, only obtained from time to time, the Court architect began a piecemeal, and, in fact, disguised conversion of the mansion into a so-called palace. Parts of the building at the back were removed, and patches of the new structure sprang up here and there, in the best, or, perhaps, the worst, way they could be managed under the circumstances, till after the absorption of several successive grants of money for those *soi-disant* repairs, the old façade was at last pulled down, and the heterogeneous structure of Nash stood revealed in all its ugliness and incongruity. Much indignation was aroused at the result of all this; there was not a single spacious apartment in the whole building, and all the rooms were so wanting in height, that foreign critics satirically remarked that "those islanders were evidently so accustomed to live 'between decks' that they were incapable of appreciating the advantages of noble and lofty apartments." In short, it has been said that such a strange mixture of the costly and the shabby had never before been agglomerated, either as a royal palace or otherwise; and it was never inhabited by its projector. It remained for the combined good taste and economy of the present reign to improve and make the best of the lamentable failure that had been perpetrated at such a lavish and wasteful expenditure. A sum of £150,000 was granted for this purpose, being scarcely more than twice the sum that had been unprofitably sunk in the detached erection of the so-called triumphal arch, which was so inconveniently placed that it had to be removed, and is now known as the Marble Arch, forming the north-eastern entrance to Hyde Park, its chief use being that of an omnibus station. With the £150,000 above-named, the present façade of Buckingham Palace was erected, and several other improvements carried out, which have concealed and, to a certain extent, remedied the defects of the wretched nucleus left incomplete by Nash.

But it is with the gardens of the palace that we are chiefly interested. These are not only beautiful in themselves, but of an extent of which few, who have never enjoyed the privilege of visiting them, are likely to form an accurate idea. Few would imagine that the garden space of a London residence, even a royal palace, which the growing city has long closely encompassed on every side, except in so far as it is protected by the open spaces of the Green and St. James's Parks, actually exceeds forty acres in extent, and that in the richly diversified grounds there is a lake of five acres, with its swans and waterfowl, as secluded in appearance as any such scene might be 50 miles from London. When reading of a "garden party" given by her Majesty at Buckingham Palace,



VUE IN THE GARDENS AT BUCKINGHAM PALACE.

one is apt to conceive that the term "garden party" is not to be received with its precisely accurate signification, but as meaning rather a meeting of the royal guests on a tolerably large lawn at the back of the palace, instead of in the ordinary reception rooms, whereas that term might fairly be taken in its widest acceptance, as any one may well imagine that in the space of forty acres there is ample space for turf glades, deep shady walks through plantations of handsome flowering shrubs, and park-like trees studded over broad expanses of greensward. It is, in fact, so; her Majesty possesses a delightful recreation ground attached to her London residence. Some of the Elms are very noble trees, being relics of the old Arlington gardens, trees that made their growth when there was scarcely a house between the oldest part of Piccadilly and the village of Kensington, while the open spaces of the park still keep off the too close proximity of the overgrown and still growing city on the east and north. On the west, however, Belgravia has grown up in its far-extending magnificence. But, fortunately for that district of mansions, the new suburb is anything but a dense mass of bricks and mortar; while on the south, however, houses of an inferior character, densely packed, have been crowded up close to the garden walls, which gives us an uncomfortable glimpse of what might have been the consequence to this breathing space of western London had it not become Crown property by the fortuitous purchase of George III. But for that circumstance, the murky demon of London building would by this time have covered that precious forty acres, and not only would the great metropolis have lost a valuable portion of its western lung, but the nation would not now have been able, in any fitting situation, to furnish the Queen with a London residence, surrounded by sufficient ground to allow her to enjoy that necessary extent of garden which is the proper adjunct of a royal residence. Our engraving represents the garden lake, with its richly-wooded banks and its picturesque island, beyond which looms the equestrian statue of Wellington at Hyde Park Corner, which forms an agreeable contrast to the irregular forms of the tufted foliage, while it is too distant to allow its manifold defects, as a work of art, to be prominently objectionable. As a "jardin anglais," to borrow a French term, this pleasure-ground, both for its extent and well-devised arrangement, is remarkably good, and one in which we may justly take a national pride. It should be mentioned that, on the Westminster side, where the too close proximity of a mass of inferior houses had to be dealt with, and its objectionable character reduced as much as possible, an embankment of considerable height has been raised, and planted with trees and shrubs, which now form a very effectual screen in that direction; so that, though these gardens are embedded, as it were, in the town on their southern side, they have, nevertheless, with their rich plantations, their handsome and secluded seats, and their temple-like pavilions and summer-houses, decorated by the pencils of our Maclises and Landseers, been made to form, near the banks of the Royal Thames, like the walks of Cæsar—

His private arbours and new planted orchards on this side of Tiber,

a spacious pleasure-ground for the private use and recreation of the Queen, quite worthy of the English nation. The art of the gardener has, indeed, gone far in the gardens of Buckingham Palace to redeem the blunders and short-comings of its architects. N. N. H.

Deer in the Royal Parks.—The number of deer kept in Windsor Great Park, on an average of the last ten years, is 1,658, as appears from a return just issued; the number killed is 128, and sixteen are annually required for the Royal Hunt. The nett cost is estimated as under £1,500 a year. In Richmond, Hampton Court, Bushy, and Greenwich Parks, the number of deer kept is 2,889; the number killed per year, 372; the estimated cost annually, £1,891. At Phoenix Park, Dublin, 780 are annually kept; 106 are annually killed, of which thirty are given to the poor and twenty-four sold; the remainder being for distribution in her Majesty's service. The average nett annual cost is £203. It thus appears that the annual cost, per head, of the deer in the Phoenix Park is considerably less than in any of the other parks.

THE ARBORETUM.

TOP-DRESSING CONIFEROUS TREES.

Few operations in horticulture are more efficacious than this. What a dusting of guano is in dripping weather to a green crop, that a dressing of fresh soil is to growing trees; it acts almost as suddenly, and its effects are far more durable. I believe, too, the action is compound; for the breaking of the turf over the roots of the trees seems to give nourishment to them, and it also cuts off such a greedy feeder as Grass from the ground. And there is a stock of fresh food provided by the top-dressing, into which the roots rush up with a rapidity stimulated, one would think, by hunger. From whatever cause, this important fact is certain, that the roots almost follow the top-dressing, and that the top mostly responds to them liberally the very first season; while the second gives even fuller proof of the effect of the dressing. I was convinced of the great utility of the system by accident. Having occasion to level the surface of a Pinetum, the peculiar position of many of the trees compelled me to level up, not down. The consequence was an accumulation of soil in some quarters from 6 to 30 inches deep. This latter I was somewhat afraid of. Roots buried so deeply might refuse to feed on the new or, indeed, on any material. These fears, however, proved entirely groundless. The deeper the dressing, the better the trees grew; not, however, that I would recommend any such depth; from 6 inches to a foot is sufficient at any one time. But, nevertheless, such was the fact. Ever since then I have been a convert to top-dressing Conifers. To keep them growing at maximum speed, dress every third year. Or if express growth is desired, and the trees are on the turf, dress every year; no labour nor expense pays better. Thousands of trees in isolated positions on the turf are simply starving into moss-covered dwarfs. Their original larder below is emptied of good things, and the Grass is robbing the roots above. Hence their weakness, leanness, stuntedness. Surface-feed, and up come the roots and away the tops and side-branches go. Now or during frost is a good time to get the dressing to the spot. It can then be applied any time between this and the middle of February. Remove the turf, cutting it thin to avoid the surface roots. Apply the dressing, and re-lay the turf directly. Where there is no turf, the operation is still more simple.

D. T. FISHER.

THUJOPSIS DOLOBRATA VARIEGATA.

I BELIEVE most of us that have seen a thriving plant of this lovely Japan Conifer will agree with Professor Thunberg, when he says, "It is the most beautiful of all evergreen trees." What can surpass it? *T. dolobrata* is grand; but the variegated variety of it is simply exquisitely beautiful. It, moreover, seems to do well in any soil; but luxuriates in a moist cold soil or sub-soil, without stagnant water. It appears to thrive best in an atmosphere of humidity, such as suits a Lycopod. In a shady nook in the neighbourhood of water it is quite at home. With me the variegated variety, as a rule, grows much faster than the normal green one. In most variegated sports or varieties the reverse is the case. There are here about a dozen of each sort of different heights, and this characteristic is very apparent in all. In some instances the rate of growth seems about two-and-a-half to two in favour of the variegated plants. The leader at once starts off vigorously, and throws off its laterals alternately with great regularity. Its outlines are superb—a pyramid to the letter. Even without its beautiful variegation, it has quite an aristocratical aspect compared with the green variety. It, moreover, seems likely to prove a good timber tree. The green variety seems to content itself with making but little headway, annually making, as it does, the lateral growths longer than the leader; and then the branches of some years' growth persist in turning up and producing leaders vying with the principal one. In all appearance the tree would shortly be a mass of contending leaders if not continually cut back. It has more the aspect of a spreading bush than a timber tree, when compared with the variegated variety, and is not nearly so graceful. At the same time both are quite hardy. Cold, wet, frost, and snow seem to have no effect on them. This is more than can be said for many other Conifers here, which the last three wet summers have very seriously injured, especially the Wellingtonias. I would

recommend to all, who may want only one small tree, the variegated variety of *T. dolabrata*. In a rockery amongst Ferns, it is at home and quite in character; and its effect is both noble and striking.

The Gardens, Maesgwynne.

JOHN TAYLOR.

FORESTS AND CLIMATE.

As we stated some time ago, Mr. Meehan had written at considerable length in the *New York Tribune* against the notion that forests modify climate to any important extent. This has drawn forth some important replies, one of which, by Mr. Henry Stewart, we reproduce. "The various climates and sharp contrasts of the vegetation of America make the study of this important subject there more likely to reward the student with definite results than with us in England. Mr. Meehan states that 'there is no piece of ground so dry in its sub-soil as that which sustains a forest upon its surface;' and, again, that the soil beneath forests is at certain seasons 'as hard as a brick, and as dry as a bone.' Further, he charges the forests with being the means whereby the vast fires are spread, which often occur in different states. I am sorry to be obliged to say that these statements are far from being consistent with facts. I have had for thirty years the best opportunities of observing the amount of moisture existing in the soil of extensive forests, in which the evaporation referred to by Mr. Meehan has had every facility to occur with the greatest possible effect. I can say with the greatest confidence that there is no ground so moist in its sub-soil as that which bears a forest upon its surface; and, further, that the surface of the soil with the accumulated leaves and debris of the forest upon it is always damp and saturated with moisture. In sleeping at night in the woods with a pair of blankets beneath the body, which I have done for weeks at a time, I have always found myself uncomfortably damp and my blankets moist with water absorbed from the ground, even in the driest and hottest weather. Indeed, so far from it being the case that the ground is 'as hard as a brick and as dry as a bone' during the season of growth, when the myriads of pumps, so picturesquely described, are engaged in draining the forest soil of all its moisture, it is precisely in that season that I have found the soil the most saturated with moisture, and, on the contrary, it is only when the forest trees are not in leaf, and the sun can penetrate the open branches, that the surface is dried so much as to permit the fire to run in the woods. I have cleared off several large tracts of woodland, and have had many burns both in the spring and the fall. I have also witnessed many severe forest fires, and know as a fact that it is in the spring before the leaves have appeared that there is most danger from fire spreading through the woods. Then the hot suns of April and May dry the surface, and the fire spreads with the greatest facility. Then, too, the utmost care is taken to prevent clearing fires to get beyond control, and I have known one in the month of May to burn over sixteen miles of dense forest in one day when assisted by a strong breeze. On the contrary, in the summer the woods are moist and damp, and the clearings are burned off then without any precaution. In the great northern forests the settlers choose this time of the year to prepare their 'fallows,' as they call these clearings. Windfalls and extensive lumbering woods filled with rubbish, of course, are exceptional cases, because the woods no longer exist to furnish shade, and these cases do not apply. It was in such places that the great forest fires of the north-west occurred two years ago, and not in the forest itself. Mr. Meehan lives in a state (Pennsylvania) in the mountains of which the farmers every spring 'burn off' the woods; that is, set fire to the dead brush and leaves in them for the express purpose of facilitating the growth of fresh herbage. These fires so made, which picturesquely lighten up the mountain sides for many miles at night each spring, can be only made at this season, because then the woods are in the driest condition; yet then the fire only burns the surface and does not injure the roots of the Grass or the Huckleberries or the weeds lying beneath it. So much for the surface. As to the sub-soil, Mr. Meehan is equally inexact. In digging hundreds of 'test' pits in the woods of northern Michigan for purposes of explorations, and in observing many railroad cuttings there and elsewhere, I have always found the soil at a depth of from 2 to 10 feet uniformly moist, and in a measure saturated with water. I remember no single exception to this in the course of several years' experience in making explorations in the woods. I have observed this in many places widely apart—in the States of New York, West Virginia, Michigan, Wisconsin, and Pennsylvania, and in the Provinces of Canada. I am thoroughly satisfied, from abundant experience, of the stability of this saturated condition of the soil beneath forests and the denser they may be the greater the degree of saturation. Again, as to the retention of the water of heavy rains on the surface in forests, I would simply ask Mr. Meehan if he ever saw a wash-out in the woods as he may see any day up on the hill-sides or

sloping fields of his state, or anywhere else he may look for them. Such a thing is unknown, but, on the contrary, the hollows and ravines in woods are so many receptacles in which the spongy surface retains the water until it passes off with deliberation. Sudden floods are therefore unknown, and the springs and streams are remarkably constant and steady in volume in wooded countries. I do not state opinions, but facts and knowledge derived from abundant observation, when I state this. The usual clap-trap about the trees pumping up vast volumes of water from the soil into the atmosphere is not neglected by Mr. Meehan. But it is simply absurd to refer to this. This is the business of the trees and what they were made to do. Nature is always equal to the occasion, and is so in this case. It is also the business of the surface of the soil and of everything resting upon it in the woods—the trees, leaf, stem, and every part of them; the rocks, and the atmosphere—as soon as the sun has set, to condense again the moisture dissolved during the day by the heated air. Not only at night, but during the day, is this condensation going on. I have observed in the month of August a difference of many degrees between the temperature in the depth of a dense Pine forest and that of the open space where it had been cleared away. The heat in the open country when the thermometer marks 100° in the shade is something astonishing to a person suddenly emerging from the cool forest into an open field or to an expanse of naked granite rocks, as I have frequently done. There is a vast amount of condensation going on as the air from these heated openings is carried by the breeze through the woods. Especially at night this condensation is excessive, and is a most striking occurrence. At daybreak everything is saturated. The water drops in showers from every spray. 'One may wring water from every bunch of Moss. The surface glistens and glitters in the beams of the morning sun as they glint athwart the sodden ground and light up myriads of drops of water and little pools held in every curled and withered leaf lying upon it. The air is super-saturated and full of fine mist, and, where the sun's beams strike a rotten stump or a prone wreck of an ancient tree, there arises a dense vapour like steam from a kettle.' This is the exact condition of things which I have observed frequently during many years. Judgment in a case of this kind must be formed from facts and not from opinions."

Uses of the Cherry-tree.—At the Michigan Pomological Meeting, Mr. H. S. Chubb paid a tribute to the Cherry-tree, which, in every position, contributes in some way to the comfort and service of man. "Even the gum which exudes from its wounds is precious for medicinal purposes, and makes an excellent mucilage;" its fruit is handsome; is undoubtedly the best that is canned or preserved; for drying, it has "no equal in the whole realm of commerce;" its curative properties are universally conceded, and its rich colour is the acknowledged standard of beauty on the lips of the most charming of women. Nor is this all. Its timber ranks high; "the household furniture next best to Black Walnut and Mahogany is made of Michigan Cherry, and thence transported to all parts of the world; the best printers' furniture is manufactured from Michigan Cherry, and distributed from thence wherever civilization has carried the printing press. Cherry, grown wild in the woods of Michigan, is sought for by the manufacturers of school furniture, as the best wood they can find for their purpose. It is easily worked; receives a good polish; has a delightful lively colour, and, in contrast with Maple and Walnut, gives a pleasing variety to decorative cabinet and carpentry work, which of late years have introduced a new charm to dwelling, office, store, railroad car, steamboat, and private carriage. The wood is hard without being coarse or knotty, and its grain, though not prominent, is fine and beautiful." Thankful ought we to be, and proud, that we live in a land and enjoy a climate where this fruit and timber can be grown.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Boxes for Lemons.—A large mill is erecting at Vanceborough, Maine, United States, for the manufacture of Lemon boxes. The material is supplied from the hard-wood forests on St. Croix lake, from which a practically unlimited quantity can be obtained. The boxes are shipped to the Mediterranean, filled with Lemons, and re-shipped to other parts of the world.

Mistletoe on the Acacia.—In your issue of the 13th inst., when describing the gardens at "Holland House" (see p. 433), you remark that the Mistletoe grows on an Acacia near the Italian garden, and record the opinion of the gardener, Mr. Dickson, that it is a rarity on that tree. So far as my observation goes, I agree with Mr. Dickson's opinion, but, at the same time, I am pleased to tell all interested in arboricultural curiosities that, a few days ago, while passing along to my nursery, I noticed a fine bunch of this favourite parasite growing on one of a pair of venerable Acacias, situated by the turnpike road leading to Staplegrave, on either side the principal entrance to the Independent College School, at Fairwater.—ROBERT H. POYNTER, Taunton.

THE KITCHEN GARDEN.

ONIONS.

To CULTIVATE the Onion well, we require good, strong, deeply-dug, well-pulverised, sweet, and rich soil. Sow the main crop from the 10th to the 28th of March, in drills, 1 foot apart. A mixture of dry wood or peat-ashes, with a portion of guano incorporated with the ashes, and drilled in with the seed, has the power of starting the young plants into a quick and vigorous growth as soon as the crop is up and can be seen. Choose a dry afternoon to draw a small light harrow or an iron-toothed rake across the drills to break the surface; then, in a few days go through the spaces between the rows with a sharp clean Dutch hoe of 8 or 9 inches in width; and, as soon as they can be properly seen, cross-hoe them with a goose-necked 3-inch hoe. It is astonishing how much such usage and timely attention will encourage their speedy growth, which is fully maintained till the crop is fit to harvest. It will also prepare the soil, and maintain it in a healthy, pulverised, sweet condition for any succeeding crop. To have young Onions fit for table at all seasons, sow little and often from January till September, and, to produce early bulbs, sow some of the Spanish or Portugal kinds about the 12th of August, to stand in the seed-bed, and transplant them in the month of February on well-prepared rich soil, a foot apart each way. Sow again in a little warmth, in pans or boxes, in January and February; harden off in due time, and transplant as before directed, in the end of March and beginning of April; they may thus be grown to any desired size and weight by the treatment before recommended, and a few light applications of guano and dry ashes in showery weather. As to varieties, as fine croppers and good keepers, I never found any better than the old Globe, the white Globe, the Deptford, the Reading, James's Keeping, and the Two-bladed for early salad, and when ripe for pickling. There are also the white Spanish, white Lisbon, Tripoli, and Nuneham Park. There are others which are very good kinds in their season and large growers, but they are not so good for winter storing.

JAMES BARNES.

LAXTON'S NEW PEAS.

We have had opportunities of noticing the result of Mr. Laxton's labours in cross-breeding flowers, fruits, and vegetables, and especially the advances which he has effected in his favourite vegetable, the Pea. We recently announced that the Royal Horticultural Society had, during the past season, awarded five additional first-class certificates to Mr. Laxton for new Peas; all those allotted by the Fruit Committee for that vegetable at the trials in 1873 having been given to Mr. Laxton. Last year, seven certificates were awarded to the same raiser, and amongst them was one for the variety illustrated in our advertising columns, which the committee were induced to re-christen Fillbasket. One of the aims of Mr. Laxton has been to improve his fine Pea Supreme, and to get a handsome podded, highly fertile, and good cooking Pea, suitable for a general crop, on shorter straw, and in this he appears to have succeeded. Another of the objects aimed at has been to gain upon Alpha in hardness of constitution and earliness. The Pea announced in our advertising columns as Laxton's No. 1, appears to fulfil these conditions, as it is described by Mr. Laxton, and reported on by the Fruit Committee of the Royal Horticultural Society as being the earliest Blue Wrinkled Marrow coming into use at the same time as Dillstone's. These two Peas are now being sent out for the first time, with Superlative, Omega, William the First, and Popular, which have already gained a reputation; and we notice that Messrs. Hurst & Son repeat their offer of £15, in five prizes, for any four of the above varieties of Mr. Laxton's Peas, including Fillbasket and Laxton's No. 1, at the next provincial meeting of the Royal Horticultural Society.

THE CHOICE OF SEED POTATOES.

As seed-time is again at hand, a few remarks upon some important experiments in the choice of seed can hardly fail to be acceptable to our readers. The first experiments to which we would refer are those by Mr. Maw on the Potato crop. In his prize essay to the Royal Agricultural Society we find the following among his recapitulations relating to very many well conducted experiments:—1. Every increase in the size of the set, from 1 oz. up to 8 oz. in weight, produces an increase in the crop much greater than the additional weight of

the set planted. The net profit over and above the extra weight of the sets, in planting 4 oz. sets in lieu of 1 oz. sets, amounted on the whole series of experiments to between three and four tons per acre, and the further profit on the increase of the size of the set from 4 oz. to 8 oz. averaged about five tons an acre, all the intermediate steps partaking proportionately of the increase.—2. The advantages in favour of the large sets is more marked in the late than in the early varieties.—3. In the use of small sets of from 1 oz. to 3 oz. in weight, a larger balance over and above the weight of the sets was obtained by planting from 6 to 9 inches apart in the rows than at wider intervals.—4. Increasing the intervals at which the sets are planted, even of the largest size, in the rows to more than 12 inches, diminishes the crop, and the wider intervals induce no increase in the weight of the produce of the individual sets.—5. It may be broadly stated that the weight of the crop is proportionate to the weight per acre of the sets, and that small sets will produce the same crop as an equal weight per acre of large sets. The fact is, however, of limited application, as a weight of very small sets equal to a weight of full-sized Potatoes could not be got into the ground, except by planting them so close as to be prejudicial to the crop. The advantage, therefore, of large sets remains practically unimpaired.—6. Weight for weight, cut sets produce as nearly as possible the same weight per acre as whole Potatoes; but, for the reasons given above, the weight of the sets should not be reduced by sub-division.—7. Smaller sets give a larger produce, in proportion to their weight, than the larger sets.—8. When the intervals between the sets in the rows are diminished to less than a foot, the produce of each individual set is proportionately diminished. Though this is not necessarily accompanied by a diminution of the weight of the crop, no increase in the produce of each individual set is caused by placing the sets at intervals wider than a foot.—9. With reference to the relative produce of different varieties, a late red sort takes the precedence throughout the experiments; and of the several varieties of Flukes, Spencer's King of Flukes, and the Queen of Flukes are much more prolific than the ordinary variety. And we would further remark that, as a rule, perfectly new sorts are usually better croppers in a new district than older or more worn-out ones. These results so thoroughly accord with our own observations, and the inquiries made of prize Potato-growers, that we are fully persuaded that the larger the sets within reasonable bounds, the greater the produce; and experiments of last year on our own farm confirmed the view that 2 oz. sets, cut from 4 oz. or 6 oz. Potatoes, produced a far better result than the same weight from 2 oz. whole tubers.

The Kitchen Garden Supply.—I was glad to observe that Mr. J. Groom, in his excellent article on this subject, in your impression of last week called the attention of young gardeners to a branch of their profession much neglected by them at the present day, viz., kitchen gardening. It is much to be regretted that, in England at least, this branch of horticulture has become so unpopular. If the kitchen gardens of England, twenty years ago, were equal to those of the present day, unless gardeners bestow more attention on this subject, I fear there is little prospect of any improvement taking place in their condition for twenty years to come. Anyone conversant with Scottish gardening is fully aware that a far greater amount of attention is paid to kitchen gardening in that country, than is bestowed on it in England. The majority of head-gardeners in Scotland make it a rule, that their apprentices, and young men who serve under them, are instructed in this useful branch of their business, as well as in any other pertaining to their profession; and, I think, English gardeners would do well to take an example from their brethren in the north with regard to this matter, and act towards young beginners in a similar manner. Anyone who has compared the kitchen gardens of Scotland with those of England, will admit that there is an air of cleanliness and tidiness about those of the former which is entirely wanting in the majority of those of the latter. If there is one thing more than another that enhances the beauty of a gentleman's or nobleman's establishment I think it is a well-kept kitchen garden. This reason of itself, I think, might prove sufficient to urge young gardeners to take a greater interest in this department of their art. Other and weightier reasons are too apparent to everyone to need any comment.—W. M. R.

Do Plants Exhale Carbonic Acid?—Plants have commonly been thought to differ from animals in the gases which they secrete, the animals parting with carbonic acid, while the plant gave out oxygen. Dr. J. C. Draper, however, maintains that all living things, whether animal or plant, absorb oxygen and give out carbonic acid; and that the life of the plant is one continuous drinking in of oxygen gas.

THE GARDEN IN THE HOUSE.

SMALL VASES OF FLOWERS.

To obtain nice and effective arrangements of flowers, it is not necessary they should be large or take many flowers to make them. This is a fault too often observable in cases where a number of flowers are employed, when half the quantity would be sufficient if judiciously arranged. The style of arrangement I speak of at present is the use of a few flowers and Ferns in large-sized specimen glasses, such as are placed on tables, or the mantel-piece in the drawing-room. A few mixed amongst other stands on the dinner-table, tend to give it a light and elegant appearance. In the drawing-room of a friend, a few days ago, I saw a small vase of this kind which I admired very much; it was composed of some spikes of pink Cape Heaths, a bloom of *Pancratium fragrans*, and a few drooping bells of a small pink Cactus, the bouquet (perhaps I should not so call it, as it was not tied) was one-sided. Some fronds of hardy Ferns were placed so as to form a kind of background; against these were the Heaths, then came the *Pancratium fragrans*, and the Cactus blooms drooped over the edge, the whole being shrouded in Maiden-hair Fern. I have in every-day use on the breakfast-table, four vases of this style ranged round a nicely grown plant of *Pteris tremula*. I have them arranged in pairs, two being composed of Roman Hyacinths, white Azaleas, scarlet Pelargoniums, and Ferns; the other two consist of yellow Roses, Violets, Roman Hyacinths, and Ferns. The rough pot of the Fern is dropped into one of china, the surface of the soil covered with Moss, in which are placed three bursted seed-pods of *Iris foetidissima*, which show up well against the green of the Moss. I could give descriptions of many little vases of this kind, but, those who are going to arrange any will have their own taste to guide them, according to what flowers they can command, and what size their specimen glasses may be. To be graceful, they should not stand more than 8 inches high, and should not be very broad at the base, as glasses too thick at the base give the whole thing a heavy appearance. I must not forget to mention that the four little vases of my own, of which I have spoken above, have been in daily use a week, and only at the end of that period have the flowers begun to look a little faded.

A. HASSARD.

Upper Norwood.



Small Vase of Flowers.

different species, side by side, was to me when botanising in the fields. To an entomologist, such a knowledge of the leaves of plants in finding the pasturage of the moths and butterflies he is seeking, must be an immense gain; and to the botanist and florist, especially to the younger ones, it may save many a "take in." One example that occurred to myself I will here relate. About three years ago I saw marked up in the public market roots of *Spiraea palmata*, neatly swathed in Moss. I asked the price; eighteen pence per root (strong roots). I could not believe it, and expressed my doubts in words, but was assured they were strong, so I paid my eighteen pence and became the owner of one, which I undid and searched for a leaf, and found a very small one; it was pinnate, but so small that I could hardly tell if I were right or wrong. I thought myself right in doubting, and said so again. What coloured flowers had the plant? "Deep rose; it was *S. palmata*." I took it home and planted it, up came pinnate leaves instead of simple palmate ones; the rosy-red flowers came, it was *Spiraea vonusta*. My plan is to dab both sides of the leaves with ink, printing from the under-side

in the book I wish to retain it in. The leaves should be used before they have fully developed their woody fibre. Composite leaves, as of the umbelliferæ, will have to be divided, and their parts printed separately; other details will soon be learnt by practice.—
JOHN MARTEN.

The Laughing Plant.

—In Palgrave's work on Central and Eastern Arabia, we read of a plant whose seeds produce effects similar to those of laughing gas. It is a native of Arabia. A dwarf variety of it is found at Kaseem, and another variety at Oman, which attains to a height of from 3 to 4 feet, with woody stems, wide-spreading branches, and bright green foliage. Its flowers are produced in clusters, and are of a bright yellow colour. The seed pods are soft and woolly in texture, and contain two or three black seeds of the size and shape of a French Bean. Their flavour is a little like that of opium, and their taste is sweet; the odour from them produces a sickening sensation, and is slightly offensive. These seeds contain the essential property of this extraordinary plant, and when pulverised and taken in small doses, operate upon a person in a most peculiar manner. He begins to laugh loudly, boisterously; then he sings, dances, and cuts all manner of fantastic capers. Such extravagance of gesture and manner was never produced by any other kind of dosing. The effect continues about an hour, and the patient is uproariously comical. When the excitement ceases, the exhausted exhibitor falls into a deep sleep, which continues for an hour or more; and when he awakens, he is utterly unconscious that any such demonstrations have been enacted by him. We usually say that there is nothing new under the sun; but this peculiar plant, recently discovered, as it exercises the most extraordinary influence over the human brain, demands from men of science a careful investigation.

My Window Rose-tree.—For several years past I have had a little crimson China Rose-tree in my window, and it has always bloomed well with me. This summer I mulched it deeply with Moss, with the view of keeping the soil cool and moist; but, unfortunately, the mulching has been allowed to remain on too late in the season; for, on removing it the other day, I found that the bark of the stem was quite rotten wherever the Moss had come in contact with it, and, doubtless, eventually the plant will die. Let me hope, therefore, that others, as well as myself, may profit by this little bit of practical experience.

Printing Leaves.—The simplest method, if sufficiently truthful, is generally best, and the method which I adopted for the above purpose when at school was that of kid dappers and printer's ink. My first pair of dappers were made of an old pair of kid gloves, and with these I printed many hundreds of leaves of different species; these I arranged according to the natural orders, and I need hardly tell you the great use such a comparison of the leaves of

THE FLOWER GARDEN.

FLOWER GARDENING IN THE ISLE OF WIGHT.

Most people have heard of the mild and genial character of the climate of this island as compared with that of the mainland of England; consequently, we expect that its superior climatic advantages will produce corresponding results, and in this, to a certain degree, we are not disappointed. The island is hilly and picturesque, and has many beautiful, highly-cultivated, and well-managed gardens. The soil, as a rule, is a good free loam on a rocky substratum, and vegetation thrives apace; whilst in many places the facilities for making wild and Alpine rock gardens are as great as about Chatsworth and in other hilly portions of Derbyshire. Verdant fields and flourishing trees border the sea to the very edge of high-water mark, except where this is prevented by the abodes of man or by huge rocky cliffs. Fashionable flower-gardening, if I may so term it, or the sub-tropical, carpet, and Alpine gardening, now so much in vogue in England, does not, as yet, prevail in the Isle of Wight, notwithstanding the superior advantages of its climate. The island, however, is annually becoming more and more a place of fashionable resort, and, accordingly, a higher style of gardening is coming into fashion, which may eventually vie with the results obtained in our London Parks, Belvoir, Cliveden, Enville, Witley Court, Trentham, and other famous gardens. For flowering trees and shrubs the island takes the precedence, unless Devon, Cornwall, and Somerset may dispute it; but, for such stately specimens as adorn the parks at Windsor, Hampton Court, Richmond, Dropmore, and a few other places, it is entirely in the background. The Isle of Wight may be called the garden of Myrtles and Sweet Bays, for there these are amongst the commonest of shrubby bushes, and attain great height and dimensions. In winter they require neither shelter nor protection, and they flourish amazingly, flower abundantly, and with their fragrance scent the air. The Myrtles are also employed as a clothing for walls, and so effectually do they perform this task that I observed at one place, near Cowes, a long wall about 16 feet high densely clad with common, narrow, and intermediate-leaved varieties with trunks about 5 inches through, and diverging into many strong branches, that bore an impenetrable mass of branchlets, always dense and evergreen, except when white with bloom. In front of this wall was a Rose-garden, a fitting place for the Queen of flowers, and one that few can picture who have not seen it and experienced the delightful fragrance diffused from the mass of these two favourites. At East Dene, Ventnor, I saw a compact and beautiful hedge of Sweet Bay some 6 or 7 feet in height, free from gap or other blemish; it occupies a somewhat sheltered position near large trees, on the face of a hill overlooking the sea; in short, it forms, as it were, a sea wall. It is trimmed annually by means of the knife, and is very effective.

Bamboos.

The most remarkable subjects I saw were some clumps of Bamboos growing in the gardens at East Cowes Castle, an old-fashioned but grand place, with beautiful gardens containing many treasures. The Bamboos in question, I think, are *B. arundinacea*, and the finest specimen is growing in a hollow near a water-spring on the side of a hill in a good loamy soil, and well sheltered by having a flowery bank on one high side, the kitchen-garden wall on the west side, and large thickly-set trees on the low and east sides; thus this clump is protected from the sea breeze and winds in general, and has a fertile, free, and moist soil to luxuriate in; indeed, better conditions could hardly be assigned to it, nor could any other plant grow more satisfactorily than this Bamboo has done. This clump consists of a mass of stems emerging from the ground as closely to one another as it is possible for them to grow, and in their upward course they diverge in all directions and are individually bent into graceful arches by the weight and quantity of their leaves. The united stems of this clump are 15 feet in circumference, and they are about 26 feet high, and form a wide-spread canopy. This grand specimen so agreeably astonished me that I spoke of it to many neighbouring gardeners, and they unanimously declared it to be the

finest on the island. At the same place, too, and growing behind the kitchen-garden wall, in very deep soil, in a make-shift nursery, is another clump of the same Bamboo, that had been planted there whilst quite small and young, eight years ago, and now it has become a beautiful specimen, 7 feet round the base, and has stems 20 feet long. At St. Clare, Ryde, I likewise saw a fine clump of the same sort, growing in a much more exposed position than that just referred to, being isolated on a sloping lawn, partially sheltered with trees, and within about 100 yards of the sea. This specimen measured $12\frac{1}{2}$ feet round the base, and had stems 17 feet long. These Bamboos, in every case, receive no protection in winter, and the frost which certainly is not severe, does not injure them.

Dracænas, Fuchsias, &c.

At East Cowes Castle, I also observed *Dracæna australis* in the most perfect condition, growing permanently out-of-doors as centres to flower-beds, where they had attained quite a tree-like appearance, and, at the period of my visit, two of them were flowering freely. What an auxiliary these stately objects would make in our gardens on the mainland, provided we could without risk trust to their permanency in winter as well as summer! But although we occasionally see them so treated, it is at most a hazard, for they will survive mild winters and certainly succumb to severe ones, unless protected at crown and root; and a tent of canvas, as is seen at this season over the outdoor Palms at Kew, or a mantle of mats, straw, or Fern, is much more objectionable in the flower-garden than are empty beds and bare, but cleanly kept, Grass lawns and gravel paths. The plants referred to, however, remain unprotected in their positions from one year's end to another, and are more likely to become the unfortunate victims of wind than of frost from their heavy heads and comparatively slender stems. Two of them had suffered from wind necessitating amputation near their base, but the roots have sent up four or five contending shoots, each in itself a massive plant, healthy and vigorous, with broad, long, and gracefully-arched leaves. In another instance one of these arboreal specimens has a clump of young ones now about 3 feet high around its base. Although there are many fine specimens of hardy Fuchsias in the island, I saw none so large as many plants reported to be growing in Ireland. The largest that I observed was at St. Clare, the variety being *F. Riccartoni*, forming a dense bush 18 feet through, with a principal stem 4 inches in diameter. At East Dene, Ventnor, the seat of Mr. Snowden Henry, many of the finest kinds of greenhouse Fuchsias, including the double white and crimson sorts, are growing amongst the bushes in the shrubberies, and as isolated specimens on the lawn under the trees, and Mr. Macintosh, the gardener, informed me that they had been planted in their present places some years ago, and since then they have luxuriated in growth, flowering profusely up to November, and during the winter season have received no protection whatever beyond the meagre shelter of leafless trees.

Jasmines, Myrtles, Yuccas.

Here, also, I observed the common yellow Jessamine (*J. revolutum*), forming a dense bush on the lawn 28 feet through, and flowering beautifully. The Jessamines, however, are not merely employed in the shrubberies and as drapery on walls, trellises, and verandahs, but in Mr. Meehan's garden, I saw the common white variety used as a dwarf edging to the flower-beds, in which capacity, with a little yearly trimming and pegging, it had a charming effect, quite devoid of the stiff character of Box, *Euonymus*, variegated Japanese Honeysuckle, and many soft-wooded plants, whilst the sprayey laterals were remarkably floriferous. In the same garden, the Myrtles were also used as edgings, precisely like the white Jessamine. The effect was very attractive, and, in genial climates, small plants of this aromatic shrub, from their persistent evergreen nature, will prove useful subjects for this purpose in the gardens of amateurs. Many are the fine specimens of the common Yucca or Adam's Needle (*Y. gloriosa*) scattered over the Isle of Wight, and some of them quite surpass anything I have seen on the mainland. They are massive and tree-like, rising with a clean stem from 7 to 11 inches in diameter for 4 or 6 feet, and then diverging into many ponderous tufted branches; the plants sometimes measuring some 9 to 12 feet in height. These grand

objects, which are quite hardly even in favourable districts of the Highlands of Scotland, are robbed of their picturesque appearance by the presence of stays of hemp or iron that embrace and support the branches, and the supports from the ground that prop the plants and maintain their equilibrium under the pressure of fierce winds. These antique candelabra-like plants, are not only stately objects whilst in leaf, but they present a striking aspect when in bloom, for it is no rarity to find three and four of the laterals blooming at once. In the flower-gardens at St. Clare I saw an isolated plant of *Yucca aloifolia variegata* 2 feet high, which had weathered with impunity the last two winters; it has grown a little, and is looking healthy.

Speedwells, Hydrangeas, Camellias.

Veronica Andersoni is another commonly grown outdoor subject in this garden-island, where it is exuberant in growth, and flowers abundantly. Bushes of this *Speedwell* from 10 feet to 20 feet in diameter, and from 5 feet to 10 feet, are not unfrequent. Unless they have been occasionally pruned into form, they become loose and straggling, but uncut plants bloom earlier than the pruned ones, consequently their season of perfection is past before cold rains and frosts are likely to injure the flowers. Here, also, the Judas tree (*Cercis Siliquastrum*), a handsome low tree with a spreading head, that produces a vast profusion of rosy-purple flowers in April and May before the forming of the leaves, may be seen to advantage, several of the specimens measuring from 20 feet to 24 feet in diameter of branches. Good examples of this too scarce tree may be seen in the Botanic Gardens at Kew, and in the arboretum at Syon House, where it is quite hardy. I also met with *Euonymus latifolius*, a handsome shrub with broad shining leaves, and of a decidedly more shrubby or tree-like character than any of the varieties of *E. japonicus*; and they were bearing a goodly quantity of large suspended red seed-vessels, that are very ornamental, either in their entire and ripe condition, or after they have become fully matured, and have opened their capsules to display their orange-coloured seeds. The Pomegranate, which on the mainland of England we nurse in our greenhouses in winter, or shelter with mats, canvas, or Fern from frost when grown against our outdoor walls, here luxuriates as an uncared-for wall-plant, and a standard or under-shrub on the lawn under the partial shade of tall trees, and in sheltered positions. *Hydrangea hortensis*, too, I remarked as having attained considerable proportions, and not partaking of that herbaceous character which climatic influences cause our plants of it in general to assume. Some bushes of it were from 12 feet to 15 feet in diameter, and the branches bending under their burden of pink flower-clusters. Camellias are much employed in the front of the shrubberies, and remain unscathed by frost when many other outdoor plants suffer from it. They grow quite freely and flower abundantly. The varieties comprise the double red and white, striped, and most of the commoner and fine sorts cultivated in green-houses. At one place, Mr. Gassett's, Ryde, where one of the finest and most extensive rock, wild, and bog-gardens in the country is being made, Camellias of the finest known sorts are extensively planted, and have a bold and brilliant effect amongst the sombre boulders, and the tiny gems that ornament them.

The Strawberry-tree and the Loquat.

Of *Benthamia fragifera*, I remarked some with showy red fruit, but for ornamental-fruited trees, nothing exceeds the Strawberry-tree, *Arbutus Unedo*. This, although by no means a stranger in our gardens and arboretums, I have not seen in such perfection as in the Isle of Wight, where it attains the dimension of a medium-sized timber-tree. During the late autumn months it has a peculiarly rich and glowing appearance from the large pendent clusters of yellow and scarlet fruits that adorn the branches. Flowers, unripe and ripe fruits, are seen on the trees at the same time, so mingled as to impress on the minds of the uninitiated the fallacious idea that the plants are blooming unseasonably. The ripe fruits, which are produced the second year after flowering, have a peculiar resemblance to those of Alpine Strawberries; hence the common name. They are not disagreeable to the palate, and are favourites with the birds after Elderberries and some

other fruits have been consumed. These Strawberry-trees constitute the bulk of the shrubberies throughout the island; and, considering their hardiness and love of open soil, and a moist mild climate, planters having such at their command should consider their importance in the landscape. Here the Loquat (*Eriobotrya japonica*), or Japanese Medlar, occupies a place in the shrubberies, and, as isolated lawn bushes, it grows well, but neither flowers nor fruits. At West Hill, however, there is a remarkably fine solitary, close-headed, and healthy specimen of the Loquat, 13 feet in diameter, which bloomed and ripened fruit in its present position two years ago. This is the only instance of the *Eriobotrya* fruiting out of doors in this country that I am aware of; and Mr. Smith, the gardener there, informs me that he has heard of no other similar occurrence on the island. At the same place I observed a most symmetrical specimen of *Garrya elliptica*, 11 feet high and 13 feet through, handsome and broad-headed, forcibly reminding one of an evergreen Oak. This, too, is a frequent occupant of the shrubbery, being commonly planted in the front, a place it deservedly holds, considering that it is one of the most attractive of evergreens, richly mantled with dark green elliptical leaves, and in early spring profusely laden with long greenish-yellow catkins that are very ornamental. This desirable shrub is very serviceable as an evergreen wall-covering or arboretum under-shrub throughout any sheltered part of the country.

Miscellaneous Plants.

Of *Photinia serrulata*, a Chinese evergreen with large glossy green leaves, and which produces a profusion of white panicles of flowers, I observed plants from 24 feet to 28 feet in height, and thickly branched. This *Photinia* is frequently grown in conservatories planted out in borders, and also in pots, on account of its floriferous character, and it blooms while in a very small state. *Magnolia grandiflora* and the Exmouth variety of the same, are everywhere abundant, and although they thrive apace and flower gloriously, they do not, in my opinion, surpass some of the specimens we have on the mainland. The Japanese Privet, however, is the late summer and autumn glory of the Isle of Wight, and it everywhere prevails, in the ordinary back shrubberies and the choicest positions of the gardens. This fine evergreen has also attained the proportions of good, somewhat pyramidal, medium-sized trees, and in all cases the amount of flowers produced is enormous. *Leycesteria formosa* grows to the height of 10 feet, and the *Phillyreas*, *Buddleia globosa*, *Berberries* (beautiful in autumn on account of the great quantity of berries they produce), the early and late-flowering *Laurustinus*, the erect-growing *Cypress*, *Metrosideros myrtifolia*, and many others have grown to large dimensions. Trees of deciduous *Cypress* (*Taxodium distichum*) are numerous, but there are none so large or characteristic as those at Syon House or at Caen Wood. The pleasure-grounds of Northwood Park are extremely rich in fine trees, particularly in evergreen Oaks and *Cypresses*. In many parts of the island *Aralia Sieboldii*, the foliage of which is so large, shining, and tropical, is not only grown in the form of low bushes, as we see it in some of our gardens, but likewise as dwarf standard trees, and receives neither care nor protection. *Eugenia Ugni* I observed growing within 20 yards of the seashore, under the shade of some deciduous trees, where it appeared quite at home, and was bearing a fair crop of fruit, which I tasted, and found them quite as well-flavoured as those borne on indoor plants. I cannot pass unnoticed the French Tamarisk (so abundant along the coast of the Isle of Wight), which no maritime district should lack. It is hardly everywhere throughout this country, delights in the sea breeze, withstands with impunity fierce blasts, and is not averse to an inland home, where it may frequently be seen in shrubberies and on water margins. The shoots are extremely feathery and graceful, bearing deciduous foliage, which retains its verdure till November, and before the trees resume it in spring, they become one mass of peculiar and pretty pink flowers. At Syon House, young plants are used amongst the summer bedding plants, and these have an extremely beautiful and graceful appearance, and greatly relieve the stiffness of their associates. Unlike most other plants, its shoots incline towards the salt water which sometimes washes its roots; nevertheless it thrives luxuriantly.

At St. Clare, Ryde, where Mr. Meehan (who, by the way, is father of the well-known and talented editor of the *American Gardeners' Monthly*) is gardener, I saw a large number of plants growing permanently out-of-doors that we always treat as indoor plants on the mainland. These include *Melanthus major*, *Eugenia Ugni*, *Kalosanthes coccinea*, *Mitrasia coccinea*, *Eriostemon myrioporoides*, *Agapanthus umbellatus*, *Aspidistra lurida variegata*, old-stemmed *Heliotropes*, and some others; a few of which occupied particularly sheltered places. At the same place, too, in the hardy Fernery, I remarked the Bird's-nest Fern, that had withstood the last four winters uninjured, but the snails are extremely fond of the young fronds; *Hypolepis exaltata*, doing well; the Hare's-foot Fern and *Pteris longifolia*, both in a thriving condition. At Apley Towers there is a magnificent flower garden in course of preparation, and there, also, a spacious Orangery has been erected, so that in future we may expect to see here, as fine Orange standards as are annually placed out-of-doors at Holland House. The finest crop of winter Roses that I ever witnessed I saw at East Dene on the front dwarf walls of the plant-houses, which are built on the face of a steep hill overlooking the sea. Gloire de Dijon is the principal variety, and about the end of November frame sashes are laid against the walls so as to protect them from cold winds; with this care, abundance of blooms continue to be produced until the advent of hard frost; but, if this does not happen, they flower unceasingly throughout the whole year.

Calceolarias.

Here I also noticed the finest beds of *Calceolaria amplexicaulis* that I have seen anywhere, and Mr. Macintosh informed me that they have remained in their present position, undisturbed and unprotected, for the last two years, and also that he not only finds it more applicable for the situation than any other sort he possesses, but it continues to flower until the middle of November, and certainly when I saw them in the end of October they were blooming as freely as I should expect to see them in July. At East Cowes Castle, too, about the same time I saw beds of dark-coloured *Calceolarias* that had remained out-of-doors for the past two years, and were then a solid mass of healthy shoots, but not in bloom. Two years is about the extreme time during which *Calceolarias* are left undisturbed, for if left longer they would become too large and straggling to be ornamental. Although these luxuriate out-of-doors all winter, a stock of them is annually wintered indoors in case of emergency.

Japan Creeper.

Planted against the eastern gable-wall of a house I observed *Ampelopsis Veitchii*, in a more flourishing condition than I had previously seen it anywhere else. The specimen in question has been planted about four years, and has attached itself to the wall with the tenacity of Ivy, and without any artificial assistance. It grew moderately the first season, and since then most robustly, stronger even than Ivy, having now fully covered the whole space allotted to it. The leaves are large, tinted in autumn most brilliantly, quite surpassing in effect that of the Virginian Creeper, Scarlet Oak, Maples, *Rhus*, *Toxicodendron*, and other plants remarkable for their beauty in autumn.

WM. FALCONER.

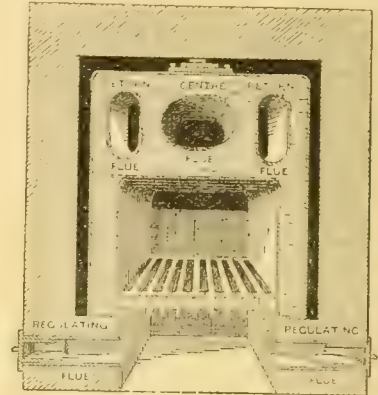
VIOLA CORNUTA.

This is a beautiful variety of an old border-flower, which, since its introduction into the summer flower-garden, has been taken in hand by the hybridiser, and many lovely forms of it now enrich our collections. The variety named Sensation, sent out by Mr. B. S. Williams, is one of the best, and may be truly called a perpetual bloomer, for, when we visited the Victoria Nursery on the 16th inst., it was in full flower, and gave every indication of continuing in that condition all through the winter. It is stated to have commenced flowering in the month of March last, and to have never once been out of bloom during the whole season. Its habit and constitution are robust, its flowers are large and delicately fragrant, the upper petals being intense deep violet-purple, and the lower ones clear violet; the eye is small and yellow, and is surrounded with rays of purplish-violet.

TOOLS, IMPLEMENTS, &c.

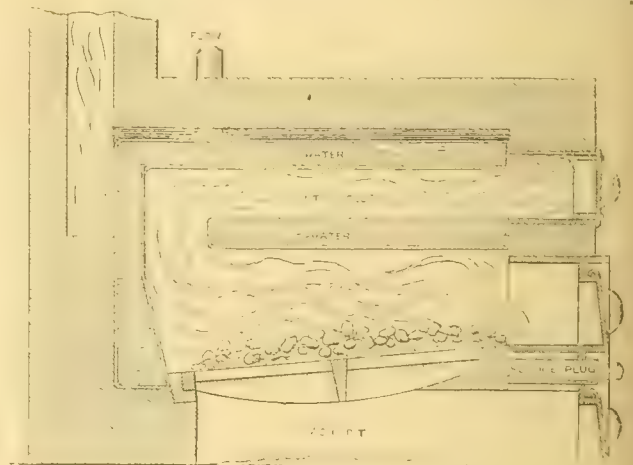
THE GOLD MEDAL BOILER.

WHATEVER boiler-makers may think about the late boiler trial at Birmingham, I feel convinced that it was a step in the right direction. Unfortunately, the trial was conducted under great disadvantages as regards weather, and it is to be hoped that, should there be another boiler trial, the pipes will be under cover; no fewer than three times did we try the above boiler at Birmingham, in order that we might feel certain of its superiority, judged according to the rules laid down for our guidance, and our verdict was unanimous in its favour. I have a vivid recollection of that trial, not simply because, being one of the



Front view.

judges, I was plodding over my boot-tops for days in mud, but in consequence of the discussion raised on account of our awarding the gold medal at our command to Messrs. Hartley & Sugden, of Halifax, for their boiler (of which the accompanying illustrations are a front view and section) and known as the "gold medal boiler." That ever since then it has been worthy of its name, and that the judges at Birmingham were justified in their award has, I believe, been conclusively



Longitudinal section.

proved, not one complaint having reached me respecting it. On the contrary, most flattering accounts of its excellence have, from time to time, been given; and I think that when such men as Mr. Williams, of Holloway, Mr. Standish, of Ascot, and other equally well-known authorities, report it to be the best boiler they use, more especially as regards economy of fuel, I shall not be considered partial in stating that it is the best saddle-boiler with which I am acquainted. It is made of wrought-iron plates, welded together, without rivets or angle-iron being used in its construction. The fire passes through the arch of the saddle, strikes on the intended water-way and terminal-end, where the flame rises through the flue-box, and passes along the centre

flue to the front, where it divides (as shown in the accompanying section), and passes through the two return flues to the chimney, thus, when properly set, exhausting all the heating properties of the flame. The economy of fuel in heating this boiler is one of its principal characteristics. The circulation of water is quick, and can easily be maintained by means of small coal, coke, or even coarse cinders. It has also another and important advantage, viz., any ordinary bricklayer can effectually set it. The price is moderate compared with that of many others, and, although we have not yet arrived at perfection in boilers, I believe this to be the best welded and chambered boiler at present in use. I employ it here over my lime-kiln, which is working most satisfactorily.

EDWARD BENNETT,

Gardener to the Marquis of Salisbury, Hatfield.

INSTRUCTION IN GARDENING.

A VERY interesting pamphlet on this subject has just appeared from the pen of M. Chas. Baltet, the distinguished fruit-grower, of Troyes, to which we think it desirable to direct attention. M. Baltet considers that it would prove highly advantageous to the country at large if gardening were systematically taught in all normal and primary schools, in agricultural schools, and, to more advanced students, in a horticultural Institute or finishing-school of gardening, in which a thorough knowledge of all its branches might be acquired. In addition to these, he recommends the general adoption of the system of public conferences or meetings of gardeners, amateur and professional, such as have for some time past been held, with the happiest results, throughout Belgium and Switzerland, as well as by the Central Horticultural Society of France. Every normal and primary school, says M. Baltet, should have a garden attached to it, and, in districts where the services of a professor of horticulture could not be secured, the pupils might be placed under the instruction of a skilled gardener of the neighbourhood, from whom they would learn the most important operations in the culture of vegetables, &c., while the master of the school would supplement these practical instructions by lectures and explanations. The school should also possess a horticultural library, a collection of models of fruits and alimentary roots, specimens of timber and seeds, a small museum of such animals, birds, insects, &c., as the gardener has to deal with, a herbarium, sets of synoptical tables on various subjects, and the pupils should be taken from time to time to inspect the horticultural establishments of the vicinity, and also to exhibitions, conferences, &c. Botanising excursions should also not be neglected. The more advanced pupils would study vegetable anatomy and physiology, the rotation of cropping in the kitchen-garden, the grafting and pruning of fruit-trees, and other subjects of equal importance.

To the course of instruction in schools now purely agricultural, M. Baltet would add such a course of training in horticulture as would very much extend the resources of the farmer by making him also an expert gardener. The horticultural Institute which M. Baltet calls upon the Government to establish, would, he says, be the crowning point of instruction in gardening, as it would furnish a constant supply of thoroughly well-trained instructors for the normal, primary, and farm-schools. The course of instruction to be followed in the Institute, M. Baltet suggests in the following programme:—The elements of botany and other branches of natural history; natural philosophy and chemistry; study of soils, composts, and manures; market-gardening—ordinary and forced culture; fruit-tree culture—study of trees and fruits; dendrology—study of useful and ornamental trees and shrubs, the making of hedges, roadside planting, &c.; floriculture—the cultivation of plants in the open air and under glass; propagation of plants—nursery work; the laying out of parks and landscape-gardens; forestry—the clearing and wooding of land; Vine-culture—in gardens and vineyards; culture of various plants used in the manufactures or the arts; keeping accounts—buying and selling, &c.; the duties of a gardener in service—the supplying his employer's house, &c.; visits to horticultural establishments, exhibitions, &c. As a site for the proposed Institute, M. Baltet recommends the Government to devote the old kitchen-garden at Versailles to this patriotic purpose. The grounds there consist of 25 acres, and, as they are already tolerably well furnished with glasshouses and structures of various kinds, their appropriation to this truly national project, would very considerably diminish the expenses of inaugurating the new establishment. Should the Government prove favourable to this application, M. Baltet looks forward to the establishment of a number of similar smaller affiliated Institutes throughout the country, the influence of which, in promoting the welfare of the entire community,

may be productive of such happy results as it would, at present, be impossible even to conjecture. We have read M. Baltet's pamphlet with much pleasure, and, while we wish every success to his benevolent endeavours to benefit his fellow-countrymen, we cannot but regret that in this, the country in which the art of gardening has attained its highest development, there is no school or society which offers any practical help to the young gardener.

WORK FOR THE WEEK.

PRIVATE GARDENS.

The Flower Garden.—Usually there are few outdoor flowers from which a Christmas bouquet may be culled, but the mildness of the present season has induced many a little beauty to bloom. Of Pansies there is a fair sprinkling in bloom just now; also some varieties of the Christmas Roses in tolerable profusion, as well as *Jasminum nudiflorum*, *Chimonanthus fragrans* (just opening), *Cydonia japonica*, *Laurustinus*, a few Rose-buds on walls, some varieties of *Aubrietias*, and stray flowers on early-sown Wallflowers. Cut down *Chrysanthemums* that are in conspicuous positions and mulch over their roots with coal-ashes or Cocoa-nut fibre. See also that the roots of *Clematises*, the finer kinds of *Roses*, *Fuchsias*, *Erythrinæ*, *Cannas*, Japanese *Lilies*, and similar plants are safe from frost by mulchings. *Pampas Grass*, *Bamboos*, and *Tritomas*, are the better of some leaves around their base, held in place by twigs of branches or soil. Whatever planting of flower-beds yet remains to be done should be accomplished as early as possible, because the sooner it is done the earlier will the plants flower. *Pansies*, *Aubrietias*, Wallflowers, Alpine *Phloxes*, *Daisies*, the golden-feather *Feverfew*, shrubby *Candytufts*, *Nemophilas*, and other early-flowering subjects can be successfully transplanted at any time before they begin to flower *en masse*.

Conservatories.—These are now gay with contributions from the forcing-house, amongst which are Roman *Hyacinths*, *Tulips*, *Crocuses*, *Snowdrops*, *Cinerarias*, *Lily of the Valley*, *Azaleas*, *Camellias*, *Laurustinuses*, *Lilacs*, and other plants of a miscellaneous character. Amongst plants naturally in flower in conservatories at present are zonal *Pelargoniums* raised from cuttings in May and June, and early-flowered plants that were cut back in July and kept dry for a time, then shaken out of their pots, re-potted, and grown on gradually. Heaths of many sorts, *Croweas*, *Monochatums*, *Leschenaultias*, some *Acacias*, *Tremandras*, *Veronicas* of sorts, *Cyclamens*, Chinese *Primulas*, and many others are also now in bloom. As auxiliaries to all these may be added the many lovely *Orchids* now in flower, especially *Odontoglossums*. Train *Tropeolums* of the tricolor type every second or third day, for, if left too long untrained, they are frequently broken during the operation. Apply weak manure-water to those that have made good growth. Keep *Humeas* near the glass, in houses where the temperature does not fall below 40° during the winter, and water them liberally. *Cinerarias* and *Calceolarias* should also be kept in cool and airy pits, and in a growing condition. Cut down and store in some dry corner of the greenhouse, *Daturas*, *Erythrinæ*, and similar plants. Keep *Mignonette* in pots in cold frames and protect them from frost or wet, and attend to the tying down of the shoots of show *Pelargoniums*, the pricking off of young *Cyclamens*, and the sowing of *Nemophilas*, *Schizanthuses*, and a few other annuals for spring decoration.

Stoves.—These are now daily improving as regards floral beauty, flowers being more abundant than they were some weeks ago. Amongst them are the different varieties of *Epiphyllum*, *Tradescantia*, *Aphelandra*, *Rondeletia*, *Amaryllis*, *Eucharis*, *Poinsettia*, and *Mussaenda*; also *Euphorbia jacquiniæflora*, *Thrysanthus rutilans*, *Jasminum Sambac*, *Russelia juncea*, *Plumbago rosea*, *Ipomœa Horsfalliæ*, *Batatas campanulata*, and a few others. These, when skilfully intermixed with fine-foliated plants, produce a charming effect. The floral display is also greatly assisted by means of *Dendrobiums*, *Saccolabiums*, *Cattleyas*, *Lælias*, *Oncidiums*, *Cypripediums*, and other plants from the Orchid-house. Wash plants with soap and water and sponge, for every insect now destroyed saves an immensity of work in spring. Maintain a temperature of 60° in stoves throughout the night, with a slight rise in the daytime. Keep *Palms* and other evergreen plants moderately moist, and deciduous shrubs, such as *Lagerstromia indica* pretty dry, but not too much so, as such would be prejudicial to their well-being. Carefully store roots of herbaceous *Begonias*, *Gloriosas*, *Achimenes*, *Caladiums*, *Kœmpferias*, *Alocasia Jenningsii*, *Nymphœas*, &c., in a dry place under the stages, or on a shelf where the temperature is from 45° to 50°. Place all plants of *Euphorbia jacquiniæflora*, that have refused to bloom, on their sides under stages, to rest prior to cutting them back and starting them early for next year's work. Keep young plants in a growing condition, and old ones moderately

dry. Economise the sun-heat by shutting up early in favourable weather, when ventilation is given.

Vegetable Forcing.—Sow successions of French Beans once every six weeks in 8-inch pots half filled with rich soil, and keep them in the Pinery, early Vinery, or other forcing-house at work. Earth up the plants before they come into flower, and syringe occasionally to keep them clean from red spider. Sow Mustard and Cress every week or ten days, as required, in any house having a temperature above 45°. Keep up a succession of Chervil by wintering some roots in pots or boxes in any of the forcing-houses. Introduce fortnightly or three-weekly successions of Sea-kale into the Mushroom-house or other place where a temperature of 60° can be maintained. In all cases, the Sea-kale must be kept dark in order to blanch it, but this can be effected by coverings of pots or boxes. Rhubarb may be treated like Sea-kale, but there is no necessity for keeping it so dark as the latter. Asparagus is best forced in frames, either heated by means of hot-water pipes, a bed of leaves and litter, or anything that will yield a kindly and steady heat of about 60°. A little light and ventilation given in fine weather will improve the colour and flavour of the grass. Of Chicory and Dandelions take up some roots in succession; insert them amongst some light soil in pots and boxes, which place in the Mushroom-house, or under a box in any forcing-pit. Maintain a temperature of 55° or 60°, either by hot water or the manure in the beds, and counteract aridity of the atmosphere and dryness of the soil by sprinkling the paths or beds, if necessary, with tepid water charged with ammonia. Sow some Lettuces and Radishes in gently heated frames, in which also start some Potatoes prior to planting them out of doors.

The Kitchen Garden.—Work here should now be well advanced, for as yet the weather has been all that can be desired, and, as long as it continues dry, much can be done out of doors. Pruning can be proceeded with; old and useless trees and bushes uprooted, and young ones planted, rubbish of all sorts collected and burned, and the ashes economised for manurial and other purposes. All empty ground should be surface-cleared of Cabbage-stumps and other vegetation, well manured, and trenched, laying it up in rough ridges. It is necessary, however, to determine what sorts of vegetables are to be grown on the different quarters next spring, as the soil for the various crops requires different kinds of preparation. Ground occupied this year by any of the Cabbage tribe, if it has been well manured for that crop, should now be deeply trenched without receiving any manure, and Parsnips or Beet should be grown thereon. When grown on freshly-manured land, they are apt to produce forked roots; but when in deep loose soil, not manured for the present crop, the sorts assume a decidedly perpendicular and unbranched character. For Cabbages, Cauliflower, and other subjects of that nature, manure the land well, and trench it too. Onions require abundance of manure and a well pulverised soil, deeply worked, and rolled firmly at sowing time. There is a good deal of stay or lasting power in rank manure, but for gross-feeding plants the well-decayed is the most serviceable, as the sooner such crops can be removed from the ground the better, and during their short stay in the earth they require food which they can readily assimilate and digest, therefore it is that the market-gardeners of London—the best vegetable growers of London—prefer old Mushroom and Cucumber-bed manure, used in large quantities, before any other for Lettuces, Cauliflower, &c. Earth up early Mazagan Beans that were sown last month, and make another sowing of the same, if required and not already done, on a warm border. Sow dwarf early Peas on a south-west border, if possible, and draw some soil to those already above ground. Stick a few evergreen branches amongst the young plants, to protect them from very hard frost or rough winds. Sow Radishes out of doors on beds in sheltered positions, and cover the ground over the seeds with 2 or 3 inches deep of rank litter. Earth up Seakale from the intervening alleys, or prepare leaves and litter for placing over the pots or wooden framework erected over the roots. Keep Parsley clean from leaves, and with hoops or mats protect a portion in frosty weather for immediate use. Stir the soil with a hoe about Lettuces and Endive on fine dry days, and lift half-grown plants for transferring to frames, there to develop themselves and become well blanched. Weed Onions from the autumn sowings, and examine the stored ones so as to discard all that are decaying. Have Globe Artichokes well protected about the necks, and in very frosty weather strew some leaves or litter over a portion of the ground occupied by Jerusalem Artichokes. Beet and Carrots should be stored by this time, but young Carrots in frames and open borders will require occasional dustings with wood-ashes, and the former the protection of a few branches in severe weather. See that the soil is firmly and closely packed around the heads of Celery in the ridges, otherwise any opening that may there exist is only a passage for cold rains that greatly tend to rot the stalks. The

August and September sowings of Turnips are now in good condition; use the largest first, so as to give additional room to the smaller ones to grow.

Protecting Materials.—All materials in the shape of mats, straw, Fern, Broom, Heather, &c., will now, or soon, be required, and should, therefore, be put into good working order. Outdoor plants that are somewhat tender should be mulched to preserve the roots, even although the stems should be killed by frost, but, in order to avert the latter evil, hay or straw bands may be twisted round a portion of the stems from the base upwards. Herbaceous plants in pots, certain kinds of Roses, little Conifers, evergreens, and other miscellaneous subjects placed together in beds, should have some stakes driven into the ground along the sides of the beds, and a few in the middle, a little higher than the others, to support rails to carry mats with which the plants should be protected on frosty nights. Mats, litter, straw, haulm, Fern, &c., are also useful coverings for glass in case of need; hay for this purpose is objectionable, inasmuch as the seeds that fall out of it grow and prove a source of annoyance. Although some of the frames may be heated by means of hot-water pipes, still use a little covering outside the glass, for much fire-heat during winter is injurious to cool-house plants, especially those wintered in frames. Place linings of litter or soil around the outsides of frames containing half-hardy plants, and ventilate freely on all favourable opportunities. Cover the outsides of stoves, greenhouses, and pits as much as possible with mats suspended or fixed on nails, so as to economise fire-heat. Cool-house plants, such as Pelargoniums, when kept rather dry, are less injured by frost than when in a damp condition. Should the frost happen to effect an entrance, do not speedily raise the temperature by means of fire-heat or otherwise, but spread some straw or mats over the glass so as to partially darken the inside, and thus permit the plants to thaw gradually and slowly, and for the next few days keep the temperature rather below than above the general height.

THE ORIGIN OF GUANO.

It has been generally supposed that guano is a large accumulation of the excrements of sea-birds, but, in a paper published in the *Journal of the Royal Dublin Society*, July, 1856, the late J. R. Kinahan, M.B., M.R.I.A., proved that such is not the origin of the guano on the Chinchas Islands, Peru, concluding his account of the south island as follows:—"Judging from the appearances traceable on this island, it would appear that the guano deposit was formed by layers of seals' dung and decayed seals, the denser and white thin layers being made up of the former, and the more friable, darker, thicker layers of the latter. These conclusions seem evident from the following:—First, the immense accumulation and peculiar formation of the guano-beds contrasted with the thin white coating of birds' dung seen not merely on the main islands, but also on the detached rocks, many of which are too high out of the water to allow for a moment the supposition that guano, if once formed on them, could have been washed off. Next the evidence of a pressure, greater than that which any trampling of birds could have caused, evidenced by the density of the strata being nearly as great at the surface as at the base of the hills, showing that it could not have arisen from mere pressure of the superincumbent mass of guano, but which appearance might have been produced by the weight of one of these sea-lions, —much more by a number of them. Next by the appearance presented by the top of the south island, the numerous dead sea-lions actually in the process of becoming guano, as evidenced by an examination of the more recent bodies, the undecayed skins of which contain within them a substance, in appearance at least, identical with the brown guano found on the summit of the hills, and also similar to that in the thicker strata. The absence of the organic remains of the birds in the interior of the guano; for though, as already stated, bones appear to decay rapidly, yet feathers resist the action of the guano for a long time. The small quantity, equivocal position (always near or on the surface), and peculiar appearance of the remains of birds at present met with, dried up and turning into a substance as unlike the true guano, or the decomposing seals, as the white deposits on the headlands—in fact, appearing to be purely of accidental occurrence, and having almost as much to say to the formation of the guano as the lizards and rats which are found along with them. One bird there is, a species of spheiscan, that possibly might assist in forming guano; but, though this bird is very numerous on various rocky islets along the coast of Peru, yet on none of them is guano found, though they are just as favourably situated for [its formation as the Chinchas; and, as birds are known to burrow in the guano, the occurrence of birds' eggs in it is easily accounted for."

